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ABSTRACT

As the first phase of a three-phase process to implement a CBTE (Competency Based Teacher Education) program in vocational industrial teacher education at the Pennsylvania State University, a study was undertaken to identify and verify teaching competencies for industrial education teacher education. After developing a list of 173 competencies, a survey was conducted of 448 in-service vocational industrial education teachers and 780 in-service industrial arts education teachers to establish the relationship of the competencies to the two groups of teachers. It was found that both groups perceive the relative importance of teacher competencies in the same manner. In regard to competencies unique to either group, it was found that the statements so identified are along the dimensions by which the two types normally differ. Thus, the teachers perceive common needs in teacher preparation and performance. The study also examined the usefulness of eight CBTE modules developed at the Ohio State University Center for Vocational Education by incorporating them into three courses at the Pennsylvania school. Based on an evaluation in one of the courses by the students, it was concluded that student attitude improved significantly due to the modules' use and that the modules were successfully infused into the course. (ELG)

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A Verification of Industrial Education Teacher Competencies by In-Service Vocational Industrial Education Teachers and Industrial Arts Teachers From The Central Region of Pennsylvania

VOCATIONAL-TECHNICAL EDUCATION RESEARCH REPORT
Volume 17, Number 1

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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In-service vocational industrial education teachers from the Central Region of Pennsylvania;

In-service industrial arts teachers from the Central Region of Pennsylvania;

Vocational teacher educators from Temple University;

Vocational teacher educators from the University of Pittsburg;

Vocational teacher educators from the Pennsylvania State University; and

Members of the Pennsylvania State University - CBTE Advisory Committee.

Recognition is given to the several graduate assistants who worked on the various phases of this project, and who made significant contributions toward the completion of this final report. Their names and major project responsibilities are indicated in the following paragraph.

Mr. Edward Bilderback developed a listing of vocational industrial education teacher competencies and implemented in-service use of CBTE modules. Mr. Larry Helsel developed a listing of industrial arts education teacher competencies. Mr. Ta-Wei Lee was responsible for data processing and developing the in-service teacher profile. Ms. Linda Leeking developed the PERT Network, and distributed the survey instrument. Mr. Nye Scofield implemented the in-service use of CBTE modules. Mr. Norm Tilton prepared preliminary in-service teacher profile information.

Dr. Robert Andreyka is recognized for providing the impetus to undertake this project, for serving as expert consultant to the project staff, and for lending continuous support and encouragement throughout the term of this project.

CHAPTER I

INTRODUCTION

State Priority

Goal VII of the Pennsylvania State Board for Vocational Education established the need to strengthen the development and implementation of comprehensively planned programs to meet the needs of and demands for competent professional vocational teachers, counselors, supervisors, and administrators (PDE - 1977). This project emphasized the achievement of Subgoal VII.2 which supported the development of competency-based relevant, responsive, pre-service strategies for the preparation of vocational education and guidance personnel; and Subgoal VII.3 which provided for competency-based in-service activities which maintain and upgrade the pedagogical and occupational competencies of vocational and guidance personnel.

Statement of the Problem

The problem was to initiate preliminary steps that are inherent in implementing a system of Competency-Based Teacher Education (CBTE) in industrial teacher education at The Pennsylvania State University. Existing studies concerning CBTE were reviewed with the intent of incorporating certain of the findings into the design and conclusion of this study.

More specifically, the problem was to identify and verify teaching competencies that are unique to, or common between the professional segments of industrial education teacher education. In addition, competency assessment criteria were defined for competencies being emphasized during experimentation with the CBTE modules developed by the Center for Vocational Education at The Ohio State University.

Need for the Study

The purpose of a vocational industrial education program is to prepare persons adequately for successful entrance into and advancement within industry. The prime requisite for a successful program is a qualified teacher who is occupationally competent and also competent in teaching methods and supporting skills which are integral to the success of the instructional process. To become occupationally qualified, the teacher must, of course, spend years in industry. As a result, little time is available for professional teacher education development in a formal teacher education program in a college, university or extension center. Therefore, a carefully planned program of pre-service and in-service education which will enable the teacher to acquire necessary skills in teaching in the shortest possible time is essential, (Andreyka, 1976).

Vocational industrial education teachers in Pennsylvania are generally recruited from industry without prior teacher education, and are required to enroll in college courses to meet teacher certification requirements while teaching. In most cases, these teachers will take whatever college courses are offered in a geographical area, regardless of their immediate need. This practice of haphazard registration is a cause of much frustration among new teachers. In addition, the increased number of persons being served, the unique personal qualities and characteristic of persons being served, the need to identify practical as well as, meaningful approaches to the professional preparation of vocational industrial education teachers, and the continued emphasis being placed upon the commonalities between the specific fields of study in industrial education, all substantiate the need for a more flexible delivery system of teacher education at The Pennsylvania State University, (Detwiler, 1971).

A Competency-Based Teacher Education (CBTE) approach is advocated as one answer to this dilemma. The competency-based approach divides the instructional process into its component parts by: (a) identifying specific instructional competencies and defining the criteria used to judge success, (b) identifying learning activities and establishing procedures for competency assessment, and (c) implementing a CBTE program delivery system. This process should give some freedom from group classroom instruction, allow for a wider selection of alternate instructional methodologies and more rapid progress toward professional competence of vocational industrial education teachers, (see Figure 1).

Statement of Objectives

This project was designed as the first phase of a three phase process of implementing a CBTE program in vocational industrial teacher education at The Pennsylvania State University. The specific objectives of Phase I of the Pennsylvania State University CBTE program included the following:

1. to review existing Competency-Based Teacher Education (CBTE) materials and delivery systems for the purpose of establishing a base of contemporary knowledge and practice in CBTE;
2. to formulate separate lists of teacher competencies for industrial education teachers which are most appropriate for CBTE programs in terms of practical application in the field;
3. to implement selected aspects of the Ohio State Centers' CBTE delivery system in conjunction with existing courses in vocational industrial education at The Pennsylvania State University;

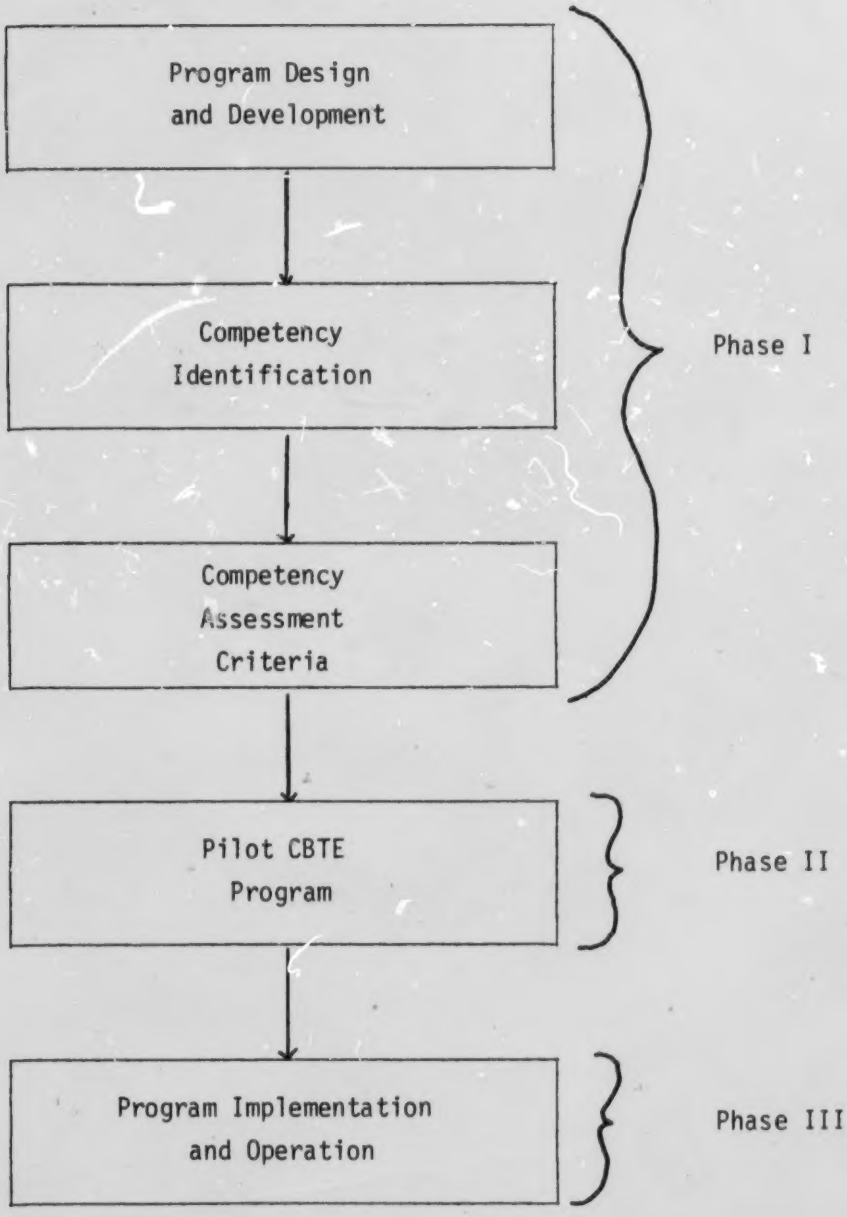

Fig. 1. The Pennsylvania State University Model for CBTE Development

4. to compare the competencies which are found to be unique to as well as appropriate for vocational industrial education teachers with those competencies subjected to experimentation utilizing the Ohio State Centers' delivery system;
5. to derive competency assessment criteria for each of the verified competencies associated with existing courses in vocational industrial education;
6. to verify teacher competencies which are unique to and common between specific fields of study in industrial education; and
7. to verify a final list of teacher competencies appropriate to the preparation of vocational industrial education teachers by The Pennsylvania State University.

A flow chart which illustrates the interrelationship between each of these objectives may be found in Figure 2.

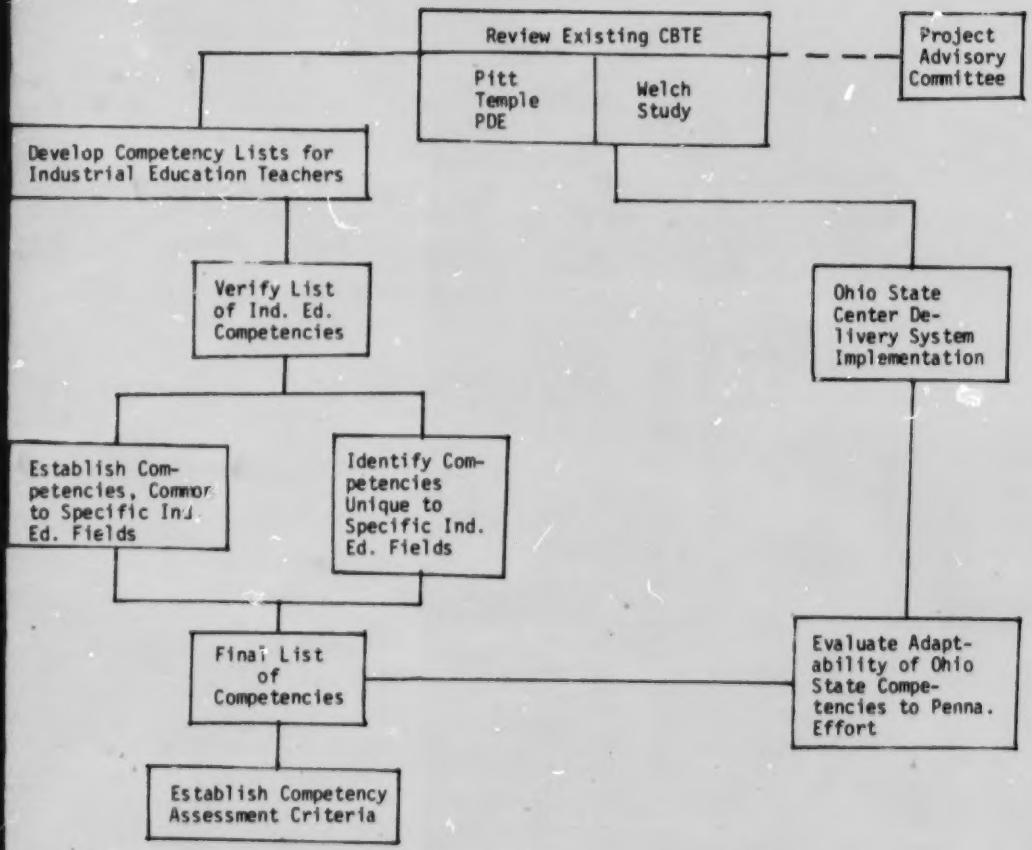

Fig. 2. PHASE 1 - FLOW CHART, The Pennsylvania State University Model For CBTE Development

CHAPTER II

PROCEDURE

PERT Network

There were a number of parallel activities integral to the project that had to be completed during the designated time frame. It became extremely important to the project staff that some indication of time lines be established for each of these activities so that regular progress toward completion might be maintained. The decision was made to construct a Program Evaluation and Review Technique (PERT) Network for the purpose of reviewing and evaluating the progress of the project.

A list of all of the project activities was established and the critical start and stop dates for each activity were identified. These activities were then recorded on index cards which were placed on a large surface area in "paths" according to their interrelationship. For example, a project activity which represented a PERT "path" was the enactment of instruction for the courses Industrial Education 19v1, 19v2, and 19v3. The beginning and ending dates for each course were then plotted into the PERT formula, $\frac{a + 4b = c}{6}$ = te, and an estimate of the time that it would take to complete each course was determined.

---

a = Optimistic time for completion of an activity.

b = Date projected to complete an activity.

c = Pessimistic time for completion of an activity. (The longest amount of time expected.)

t_e = Time estimate; the time resulting from the projected dates being plotted into the formula.

Hypothetical example: If t_e = 4.4, the average time plotted on the PERT chart was 4 weeks and 2 days because .2 = 1 day, .4 = 2 days, .6 = 3 days, etc. based upon a five day work week.

Congruent activity lines (paths) for each major project activity were established to develop the entire PERT network. A scale had to be established in order to develop the length of the activity lines. The scale that was used is represented by the relationship t_e = 1 = 1cm. The circles on the PERT chart represent the beginning and end of each activity.

A time line was plotted below the PERT chart in order to establish an easy reference to the activities to be completed each month. The PERT network with identified activities may be found in Figure 3.

Advisory Committee

An advisory committee was formed during the early stages of the project to provide direction and consultation for the project staff. In order to establish a cross-section of individuals who were interested in and effected by the establishment of a competency based teacher education program at The Pennsylvania State University, representatives from the following agencies were requested to serve on the committee:

a. The Pennsylvania State Department of Education - Teacher Education;
b. The Pennsylvania State Department of Education - Industrial Arts Education;
c. Temple University - Trade and Industrial Education;
d. The University of Pittsburgh - Business Education;
e. Secondary Vocational Education Schools - Teacher;
f. Secondary Vocational Education Schools - Administrator AVTS;
g. Secondary Industrial Arts Programs - Teacher;

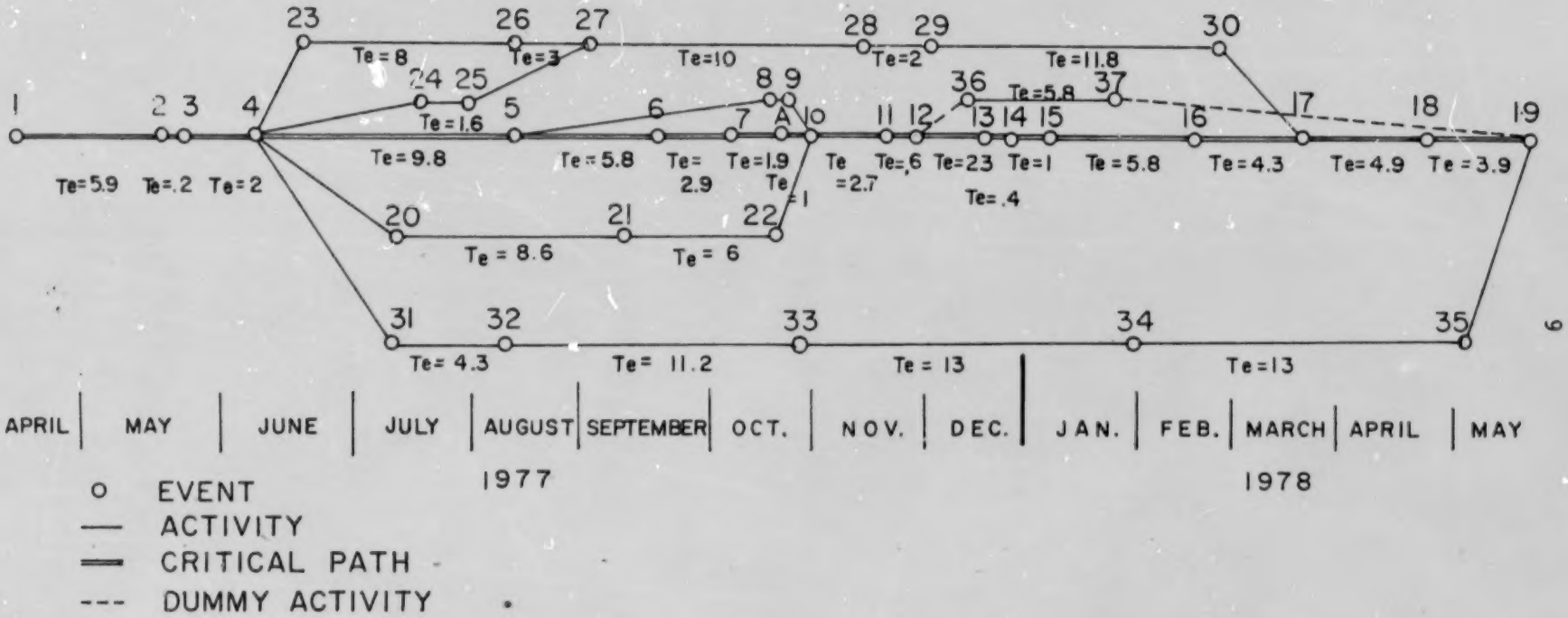

Fig. 3. PERT C.B.T.E. PROJECT - PENNSYLVANIA STATE UNIVERSITY

JULY 1977 - JUNE 1978

Competency Based Teacher Education Program

PERT Activities

(Figure 3 Continued)

1977

1. Preliminary planning of project - April 14
2. Computer search for contacting sources of lists of previously identified C.B.T.E. competencies - May 25
3. List-identified and returned - May 26
4. Start of project - June 8
5. Acquisition of computer tape of Pennsylvania's industrial arts teachers - August 17

5A. Acquisition of computer cards of Pennsylvania's vocational industrial education teachers - August 17

6. Faculty review of competency list to aid finalization - September 27
7. Multiple Matrix Workshop - October 14

7A. Change competencies into more descriptive forms; choose samplings of competencies from total list - October 23

8. Programming of computer tape to obtain list of teachers in The Pennsylvania State University service area - October 28
9. Order address labels from programmed tape - October 29
10. Mail competency instruments - November 4
11. Tabulate first mailing, prepare for second mailing - November 22
12. Send second mailing of competency instruments - November 25
13. Tabulate data of second mailing - December 16
14. Phone calls to non-responders - December 19, 21, 22

1978

15. Begin tabulating all data - January 9
16. Assessment of competencies from results of research - February 20

1978

17. Evaluation of adaptability of Ohio State Delivery System to Pennsylvania effort - March 20

18. Relate verified competencies and their adaptability into Pennsylvania's program goals - April 24

19. Final report - May 22

1977

20. Start of demographic instrument - July 14

21. Instrument cover letter - September 13

22. Decision on amount of demographic information needed - October 25

1977

23. Start of 19v1 - June 22

24. Computer search of C.B.T.E. educational programs - July 25

25. Return of results of computer search - August 4

26. End of 19v1 - August 17

27. Start of 19v2 - September 7

28. End of 19v2 - November 14

29. Start of 19v3 - December 1 (Adaptability of Ohio State's effort)

1978

30. End of 19v3 - February 23

1977

31. Organize first advisory committee - July 15

32. First advisory committee meeting - August 15

33. Advisory Committee meeting - November 2

1978

34. Advisory Committee meeting - February 1

35. Advisory Committee meeting - May 3

36. Start proposal of Phase II of project - December 12, 1976

37. Finish proposal - January 21, 1977

h. Comprehensive Secondary Vocational Education Schools - Administrator;

i. Post-secondary Vocational Education Schools - Teacher; and

j. The Pennsylvania State University - Home Economics

A letter was sent to each of the representatives and their respective supervisor requesting that they be released from their assigned duties in order to serve on the advisory committee (Appendix A). The complete membership of the advisory committee may be found in Appendix B.

Four advisory committee meetings were held during the term of the project. Each of the meetings was scheduled to begin at 10:00 a.m. and to terminate at 3:00 p.m. The meetings were held at the Nittany Lion Inn on The Pennsylvania State University Campus and assumed the following general format:

10:00 - 12:00 noon	Project Staff reports
12:00 - 1:00	Informal Luncheon
1:00 - 3:00	General Discussion

An attempt was made to maintain open lines of communication between the advisory committee members and the project staff. A record of each of the advisory committee meetings is on file in the office of the project director. A letter of appreciation was mailed to each of the advisory committee members following the termination of the project (Appendix C).

Development of the Competency Statements

Introduction. The first objective of this project was to effect a review of existing CBTE materials and delivery systems for the purpose of establishing a base of contemporary knowledge and practice in CBTE.

The Computer Based Bibliographic Search Service (CBBSS) provided by the Pennsylvania State University library was used to develop a list of citations with abstracts pertaining to CBTE (P.S. U. - 1977). Thirty-seven references were identified which established:

1. the status of research with identification and verification of competency statements;
2. the status of research in competency based and/or performance based education (and teacher education); and
3. the location of programs in competency based teacher education.

A search of Vocational Educational Information Network (VEIN) administered from the Millersville State College, Millersville, Pennsylvania, provided additional references to the topic of CBTE. Categories similar to those used in the CBBSS were specified to initiate the VEIN search which generated sixty-three relevant Educational Research Information Center (ERIC) numbers.

Temple University, Philadelphia, Pennsylvania, and the University of Pittsburgh, Pittsburgh, Pennsylvania, were visited by project staff for the purpose of establishing contemporary practice in CBTE, and to eliminate duplication of effort with this regard within the Commonwealth. Interviews were held with faculty members and resource persons responsible for the operation of the various CBTE programs; materials which described the implementation and operation of CBTE programs were studied; interns at various stages of professional development were observed; the Local Educational Agencies (LEA) participating in CBTE programs were visited.

The foregoing activities provided the reference base for completing Phase I of the project designed to establish a Competency Based Teacher Education program for industrial education teachers at The Pennsylvania State University. Documents generated as a result of these activities are on file in the project director's office.

Sources of Competency Statements. The second objective of this project was to formulate separate lists of teacher competencies for industrial education teachers which were most appropriate for CBTE programs in terms of practical application in the field.

Major efforts relative to CBTE are currently underway in all academic and vocational areas for pre-school, elementary, secondary, post-secondary, adult, undergraduate, and graduate programs. Development, implementation, and dissemination efforts are in process at colleges and universities, and in educational agencies at the local, state, regional, and national levels, (Norton, et. al. - 1978). Therefore, it was not the intent of the project staff to develop a "new" list of competencies to form the foundation for the CBTE program at The Pennsylvania State University.

It was more reasonable to use lists of competency statements that had been verified by others, as the basis for this study. In addition, a more content valid list of competency statements could be generated by using competency statements from multiple sources rather than from a single source. Following are the five agencies from which verified lists of competency statements were acquired prior to the development of the final list of competency statements for this project:

1. Department of Vocational Education, Temple University;
2. Center for Vocational Education, The Ohio State University;

3. Department of Vocational Education, Florida State University;
4. Program in Home Economics Education, The Pennsylvania State University; and
5. Program in Vocational Industrial Education, The Pennsylvania State University.

Compiling the Final List of Competency Statements. Two hundred and ninety-four (294) vocational education competency statements, and one hundred and fifty-six (156) industrial arts education competency statements were recorded from the five sources and compiled on two separate lists. Each of the competency statements was cataloged under one of nine general categories of competency statements originally identified by the Center for Vocational Education at The Ohio State University. The nine general categories of competency statements include the following:

Category A: Program Planning, Development, and Evaluation

Category B: Instructional Planning

Category C: Instructional Execution

Category D: Instructional Evaluation

Category E: Instructional Management

Category F: Guidance

Category G: School-Community Relations

Category H: Student Organizations

Category I: Professional Role and Development

Each of the composite lists of competency statements was examined for similar or identical items. Competency statements that were judged to be identical, by concensus of the project staff, were rewritten in the form of a single competency statement which, in the judgement of the project

staff, preserved the content validity of the separate parts. The number of competency statements in each of the composite lists was reduced appreciably by this means.

The competency statements were then reviewed and rewritten, where necessary, to establish a uniform level of clarity. That is, ambiguous statements were rewritten so that professional educators would interpret the intended meanings in the same manner. This step was taken to avoid differences in operational definitions by professionals in the field during the verification process.

At this point of the evaluation, the parallel lists of competency statements for vocational education and industrial arts education were examined for common and unique items. The items that were observed to be unique to industrial arts education were added to the list of vocational education competency statements and the combined list became the list to be validated through field testing.

The combined list of competency statements was distributed to the industrial arts education and vocational industrial education faculty members at The Pennsylvania State University for validation. As a result of this process, eight competency statements were revised to improve clarity of statements, and four new competency statements were added to the list.

The competency statements validated by faculty members at The Pennsylvania State University were organized into a preliminary survey instrument for field testing. The instrument was administered to approximately 15 in-service vocational industrial education teachers and 20 pre-service industrial arts education teachers. These individuals were requested to respond to each competency statement as well as to identify statements which they felt were ambiguous. As a result of the field test,

nineteen competency statements were rewritten to improve the clarity of presentation and the list of competency statements to be used in this project was finalized (see Appendix D).

Development of the Survey Instrument

Sampling Strategy. The item pool (list of competency statements) that provides the foundation for this study contains 173 items. It was unreasonable to expect that the survey population should have to respond to all of these items. Therefore, a procedure had to be identified that would permit generalized statements to be made about the perceptions of the total population toward the total list of competencies without administering all of the competency statements to all of the participants in the survey. The multiple matrix sampling technique was selected as the means of accomplishing this task.

Multiple matrix sampling is a specific sampling procedure in which a K-item domain is divided through random sampling into subtests containing k-items each with each subtest administered to n examinees selected randomly from the N-examinee population (Shoemaker - 1977). In this study:

K = 173 competency statements

t = 5 subtests

k = 34 or 35 competency statements per subtest

N = 1228 in-service vocational industrial education and industrial arts education teachers located in the Central Region of Pennsylvania

Figure 4 illustrates the theoretical model for multiple matrix sampling that was utilized in this study.

According to Shoemaker, implementation of multiple matrix sampling is a three-step process (Shoemaker - 1977). The first step in the

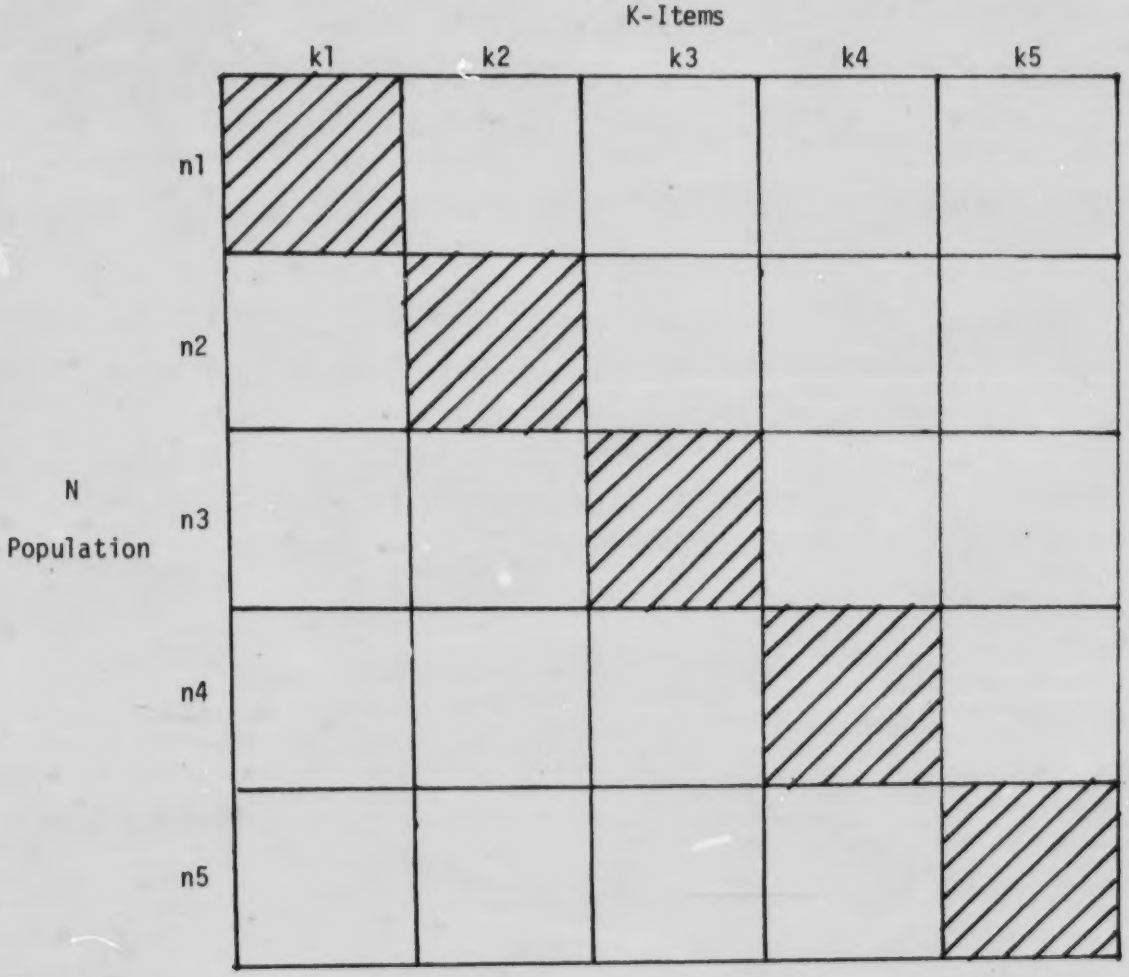

Fig. 4. Multiple Matrix Sampling Model

process is to divide the K-item domain into two or more subdomains. It was mentioned earlier in this report that the 173 competency statements verified for this study were divided into nine categories according to professional emphasis. Figure 5 outlines this subdivision of competency statements into the nine categories by title, and provides the number of competency statements that are represented in each category.

The second step in the implementation process is to formulate t subtests each having k items. The items for each subtest were selected through a stratified random sampling plan, with the stratification being by category of competency statements. The number of competency statements that were selected at random and without replacement from within each category is recorded in Table 1. The reader should note that all of the 173 competency statements are included in the set of subtests, and that no competency statement is in more than one subtest. It should also be noted that each of the subtests is approximately the same length, and contains competency statements from every category included in the total list of competency statements. The five (5) subtests or survey instruments that were developed as a result of this process may be found in Appendix E.

Identification of the Survey Population

The third step in Shoemakers' scheme requires that each of the subtests be administered to approximately the same number of participants selected at random from among those participating in the survey.

Participants in this survey consisted of all the in-service industrial education teachers practicing in the public schools located in the Central Region of the Commonwealth. A complete list of practicing industrial arts education teachers was acquired from the Pennsylvania Department of Education, Division of Educational Statistics. Seven hundred and eighty

CATEGORY	TITLE OF CATEGORY	NUMBER OF COMPETENCY STATEMENTS PER CATEGORY
A	Program Planning and Development	16
B	Instructional Planning	23
C	Instructional Execution	41
D	Instructional Evaluation	19
E	Instructional Management	14
F	Guidance	28
G	School Community Relations	9
H	Student Organizations	8
I	Professional Role and Development	15
	Total	173

Fig. 5. Association of Competency Statements by Category and Title

Table 1

Competency Statement Distribution by Subtest and Category

CATEGORY	NUMBER OF ITEMS PER CATEGORY	SUBTESTS				
		NO. OF ITEMS ON T_1	NO. OF ITEMS ON T_2	NO. OF ITEMS ON T_3	NO. OF ITEMS ON T_4	NO. OF ITEMS ON T_5
A	16	3	3	3	3	4
B	23	4	5	5	5	4
C	41	8	8	9	8	8
D	19	4	4	3	4	4
E	14	3	3	3	3	2
F	28	6	5	6	5	6
G	9	2	1	2	2	2
H	8	1	2	1	2	2
I	15	3	3	3	3	3
TOTAL	173	34	34	35	35	35

names were recorded and appropriate address labels were prepared for mailing the survey instrument. Concurrently, mailing labels for all of the in-service vocational industrial education teachers located in the Central Region of Pennsylvania were requested and received from the Vocational Educational Management Information System (VEMIS). Four hundred and forty-eight names were represented on these address labels. The total number of in-service Industrial Education teachers located in the Central Region of Pennsylvania and available to participate in this survey was 1228.

In Table 2, Column A records the numerical characteristics of the survey population, and Column B indicates the number of copies of each of the five subtests that were randomly distributed to the separate segments of the total population. The reader should note that for each competency statement included in the survey, two hundred and forty-five responses could possibly be received. Results generated in this manner using multiple matrix sampling are generally identical in scope to those obtained from a survey in which the total population is administered all items. The major exception is that the subtest responses are not reported for each individual from the survey population (Shoemaker - 1977). However, the function of this project was to generalize statements about all Industrial education teachers' competencies in the Central Region of Pennsylvania rather than to be able to make statements about individual teacher comparisons. Therefore, the use of multiple matrix sampling in this instance was clearly justified.

Distribution of the Survey Instrument

It was necessary to insure that an even distribution of each subtest was maintained by school and geographic location. The names of the

Table 2
Survey Population and Distribution of Subtests

	COLUMN A	COLUMN B
	Total Number of In-Service Teachers - Central Region PA	Distribution per Subtest
Vocational Industrial Education Teachers	448	89
Industrial Arts Education Teachers	780	156
Totals	1228	245

industrial arts education teachers and the vocational industrial education teachers were identified with blue and red ink respectively and were coded according to the following numeric schedule:

Those receiving subtest T-1 = 1001; 1002; 1003; etc.

Those receiving subtest T-2 = 2001, 2002, 2003, etc.

Those receiving subtest T-3 = 3001; 3002; 3003; etc.

Those receiving subtest T-4 = 4001; 4002; 4003; etc.

Those receiving subtest T-5 = 5001; 5002; 5003; etc.

Teachers practicing in the same school were assigned consecutive numbers of subtests until the number of teachers exceeded five. At this point the assignment of subtests would revert back to T-1 and the number of the copy of subtest would advance. Consider a school that employed seven industrial arts teachers, each of whom was to receive a copy of the survey instrument. The first teacher would have been assigned the number

1001, the second teacher would have been assigned the number 2001, the sixth teacher would have been assigned the number 1002, the seventh teacher would have been assigned the number 2002. Assignment of code numbers to teachers of succeeding school districts would be continuous from this point. That is, the first teacher in the next school district would receive the code number 3002 and so on.

In summary, five survey instruments (see Appendix E) were developed which contained either 34 or 35 competency statements which were selected by stratified random sampling from a total field of 173 competency statements. These survey instruments were randomly distributed to 448 in-service vocational industrial education teachers and 780 in-service industrial arts education teachers practicing in the Central Region.

The distribution of each of the five subtests and the corresponding rate of return according to the size of the various schools is presented in Table 3 for vocational industrial education teachers, and in Table 4 for industrial arts teachers. The reader should note from both Table 3 and Table 4 that a fairly even distribution of subtests was maintained in keeping with Shoemaker's stipulation.

The 72% overall return of the five instruments from vocational industrial education teachers and the 60% overall return of the five instruments from industrial arts education teachers represents a most satisfactory response from the survey population.

Implementation of CBTE Modules

Introduction. The third objective of this project was to implement selected aspects of the Ohio State Centers' CBTE delivery system in cooperation with existing courses in vocational industrial education at

Table 3

Distribution of Five Survey Instruments to Vocational Industrial Education Teachers and the Corresponding Rate of Return by Size of School

Size of School by Number of Teachers	T_1		T_2		T_3		T_4		T_5		Totals	
	a*	b**	a	b	a	b	a	b	a	b	a	b
5 and under	7	7	10	6	5	4	11	8	7	5	40	30
6 - 10	1	0	6	4	9	8	6	5	0	0	22	17
11 - 15	24	20	23	19	25	20	20	15	16	11	108	85
16 - 20	16	11	14	10	14	11	13	6	15	9	72	47
21 and over	45	42	41	29	37	24	35	27	48	42	206	164
Totals	93	80	94	68	90	67	85	61	86	67	488	343
% Return		86		72		74		72		78		72

* Column a = Number of survey instruments sent

** Column b = Number of survey instruments returned

Table 4

Distribution of Five Survey Instruments to Industrial Arts Education Teachers and the Corresponding Rate of Return by Size of School

Size of School by Number of Teachers	T_1		T_2		T_3		T_4		T_5		Totals	
	a*	b**	a	b	a	b	a	b	a	b	a	b
5 and under	80	45	80	44	82	52	87	51	86	52	415	244
6 - 10	49	29	46	29	47	36	41	22	41	27	224	143
11 - 15	11	5	11	6	9	6	10	8	11	3	52	28
16 - 20	17	8	18	11	18	11	18	10	18	10	89	50
Totals	157	87	155	90	156	105	156	91	156	92	780	465
% Return		55		60		67		60		60		60

* Column a = Number of survey instruments sent

** Column b = Number of survey instruments returned

The Pennsylvania State University. Eight CBTE Modules developed by the Center for Vocational Education were incorporated in the learning experiences of these courses offered by The Pennsylvania State University, during the 1977 - 1978 school year to prepare forty-one in-service Vocational Industrial Education teachers for level one teacher certification.

In this section, the courses are discussed first, followed by a discussion of the characteristics and geographical distribution of the student teachers. Finally, the section concludes with an outline of the selection and the adaptation of Ohio State Center for Vocational Education modules.

Courses. Industrial Education (I. Ed.) 19v, Observation and Practice Teaching, was scheduled to be presented during a period of four terms for in-service student teachers. The course began with the Summer Term 1977, and continued through the next three terms as three sequential courses. The third term of the course was presented twice, (in both the Winter and Spring terms) in order to permit the supervision of all the students, practice teaching at their own schools. In this arrangement, the student teacher earned two credits for successful completion of each of three terms. For the individual student teacher, the first term was devoted to demonstration teaching, the second to observation of teaching and one of the last two terms to practice teaching.

The objectives for I. Ed. 19v1, Demonstration Teaching, the first course of the sequence, were accomplished in a simulated classroom and were:

1. to provide practice teaching experience for each member of the class through the presentation of skill and information lessons;

2. to provide experiences in the preparation and use of lesson plans, and other teaching aids; and
3. to develop an appreciation of the de irable attributes of an effective vocational-industrial teacher.

The objectives for I. Ed. 19v2, Observation of Teaching, the second course of the sequence, were completed for the most part in a real school setting and were:

1. to provide an opportunity for members of the class to observe the physical facilities, instructional organization, student activities, and techniques of teaching in actual vocational-industrial school shops;
2. to provide an opportunity for members of the class to evaluate the effectiveness of observed instruction and discuss reactions; and
3. to provide an opportunity for members of the class to collect helpful instructional materials from in-service teachers who are observed.

The objectives for I. Ed. 19v3, Practice Teaching, the last course of the sequence, were performed in a real school setting and were:

1. to provide practice teaching experiences for each student through the presentation of skill and information lessons;
2. to provide experiences in the preparation and use of lesson plans, other teaching aids, and multiple-choice tests;
3. to develop an appreciation for the total instructional process and inter-relationship that exists between the various stages of the applicatory system of instruction.

During the first two terms, Summer and Fall 1977, I. Ed. 19v1 and I. Ed. 19v2 were presented for in-service teachers at three off-campus locations. There were 11 student teachers in one section, 12 in another, and 18 in the third section. 41

In I. Ed. 19v1 during the Summer Term the student teachers met weekly for a double period. During this term each student teacher presented at least one skill lesson and one information lesson to his peers. His performances were discussed immediately by his peers and the instructor. Additional tasks included the preparation of several lesson plans, and the completion of several formal evaluations of peer presentations. The emphasis was on student teacher performance in lesson planning, presentation, and evaluation of presentations.

Following this, during the Fall Term in I. Ed. 19v2, the student teachers spent the greater part of their time in visiting experienced vocational teachers, observing them in their shops, laboratories, and classrooms. Five different teachers were visited, each for a half-day. The student teachers submitted written reports on these visits and met with their instructors every other week, in the same three locations as in the summer, for class discussions of their observations.

During the Winter and Spring terms, 1978 the student teachers in I. Ed. 19v3 met only once as a group, at the beginning of the term, in their respective sections. During the rest of the term each student teacher was visited in his own shop and classroom by an instructor on a weekly basis. As alluded to previously, a given student was enrolled in this phase of the course during only one of the two terms. Emphasis was on student teacher performance in presenting both information and skill lessons to their students; on the selection, preparation, and use of teaching aids; and on preparation and use of multiple choice tests. A total of six presentations by the student teacher to his students were evaluated by the instructor.

Characteristics and Geographical Distribution of Student Teachers.

At the beginning of the Industrial Education 19v sequence in June, 1977 a background questionnaire was completed anonymously by most of the student teachers. The following is a summary of the information obtained from the questionnaires.

1. General
   a. Employment - 94 percent were employed in educational positions.
   b. Age - The average age was 40.5 years and ranged from 21 to 61 years.
   c. Teaching certificates - 86 percent held Intern Certificates. Most of the certificates were in trade and industrial education, but four were in health occupations.
2. Vocational Teacher Qualifications
   a. Education - Two of the student teachers held the baccalaureate degree, one-third had completed at least sixteen college credits and one-third had graduated from a secondary vocational program.
   b. Occupational Experience - Nine members of the group had more than 25 years of non-teaching experience at their occupation, while 14 had more than 10 years experience. More than one-half had been working at their occupation as recently as three years before the data were taken.
   c. Occupational Competency Evaluation - 97 percent had satisfactorily completed an occupational competency examination or evaluation.

d. Teaching Experience - As would be expected, this level of experience was relatively low. Eighty-nine percent had less than three years of teaching experience.

The in-service student teachers were employed at schools which were widely distributed over the Penn State service area. These schools were located in counties from the state of New York to the Maryland borders, and some of the heaviest concentrations of student teachers were employed in these border counties. The largest number was seven, located in Bradford County to the north, while several scattered counties had only one student teacher. The map in Figure 6 shows the number of student teachers at each school.

Forty-one student teachers were enrolled in off-campus Industrial Education 19v classes during the 1977-1978 school year. During this period of time three students dropped the course (for other than academic reasons) and three other students (with previous credits in I. Ed. 19v) added the course.

During the 1977 Summer and Fall terms, classes were held at three locations: Troy, Williamsport and Middletown. Initial enrollment at the foregoing locations was 11, 12 and 18 respectively.

Available manpower to supervise student teachers at their schools during the third phase of I. Ed. 19v consisted of one person half-time and one person one-quarter-time. Each student teacher was to be observed (and his presentations evaluated) with his students six times over a period of ten weeks. This could be done by enrolling part of the student teachers for this final phase of the course during the Winter term and the rest during the Spring term, 1978. It also required the retention of an outside resource person to supervise three or four student teachers each term.

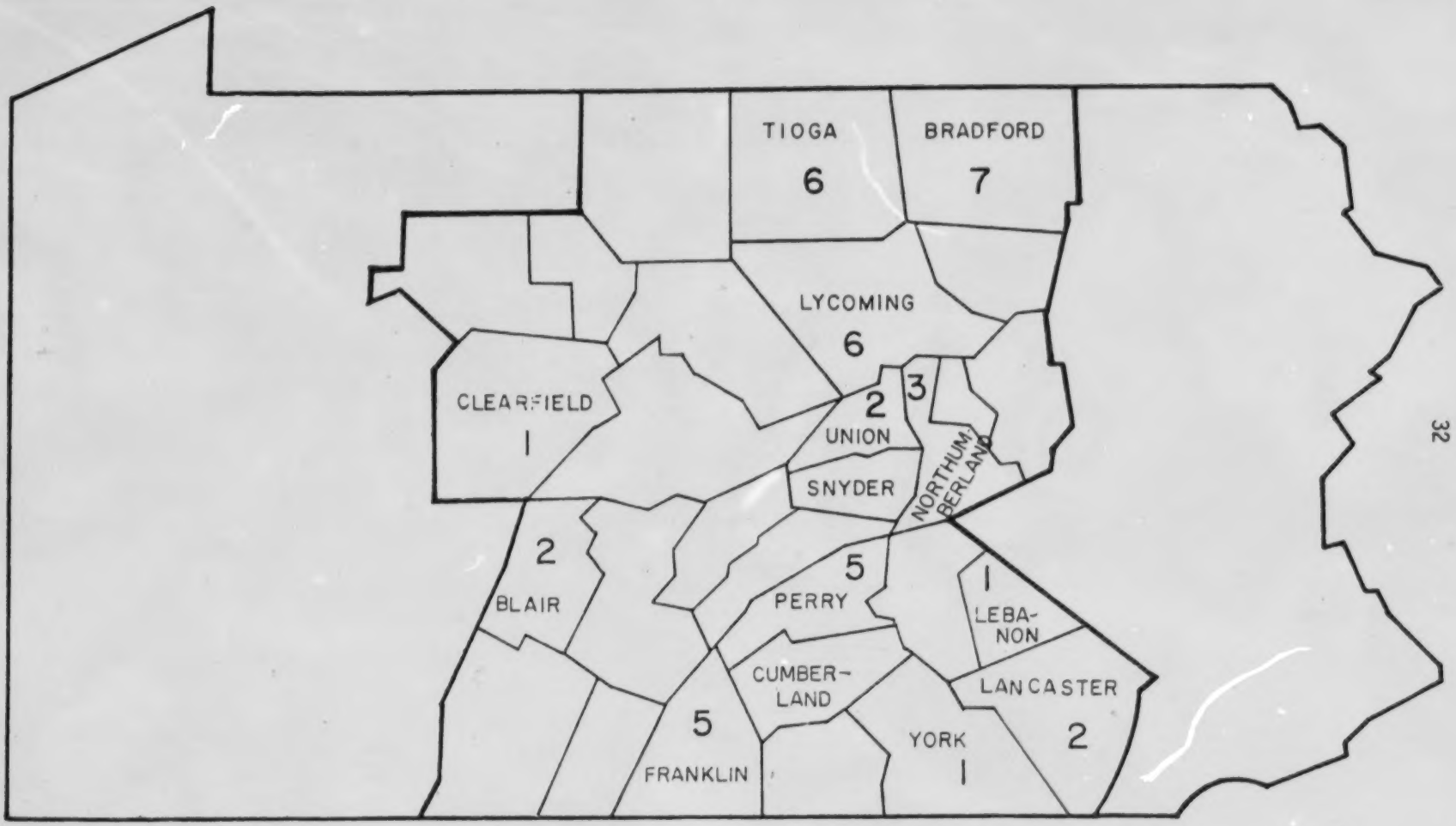

Fig. 6. Student Teacher Employment Location

During the Winter term one supervisor spent two days visiting a total of eleven student teachers each week in three southern counties while the other supervisor spent one day per week visiting six student teachers in one of the nothernmost counties. During the Spring term the pattern was the same; one supervisor spent two days per week visiting a total of ten student teachers in three counties, the other supervisor visited seven student teachers in the other northernmost county.

The Selection and Adaptation of Modules. The basis for selection of modules prepared by The Center for Vocational Education at Ohio State was to replace most of the student references previously used in I. Ed. 19v. The modules specified terminal objectives which would lead to attainment of the course objectives. The performance elements covered by the selected modules were also compared with a set of competencies previously selected for I. Ed. 19v to further assure the suitability of the modules for use in the course. This relationship is discussed in the following paragraphs.

Three modules were selected and used in I. Ed. 19vl, Demonstration Teaching, during the Summer term, 1977. These were: Module B-4, "Develop A Lesson Plan", Module C-16, "Demonstrate A Manipulative Skill", and Module C-23, "Present Information With Overhead And Opaque Materials."

Each student was expected to attain the terminal objective of each module, under a simulated classroom setting. The students peers and course instructor evaluated each performance using the "Teacher Performance Assessment Form" (TPAF) from the back of the appropriate module.

Five modules and a Penn State monograph were selected and used as texts in I. Ed. 19v2, Observation of Teaching, during the fall term, 1977. These include: Modules B-4 and C-16, used previously. The additional three modules were: Module E-5, "Provide for the Safety Needs of Vocational Students; Module E-8, "Organize the Vocational Laboratory"; and, Module E-9, "Manage and Maintain the Vocational Laboratory". During this term, the modules were used only as sources of information. Student tasks were given in separate assignment sheets. The Penn State monograph, Teaching Trade and Industrial Subjects by William A. Williams, was used to provide the student teachers with supplemental information on which to base observations and reports, as required by the first objective for I. Ed. 19v2. Some of this information was not contained in sufficient detail in a manageable number of the modules.

Two additional modules and another Penn State monograph were selected and used in I. Ed. 19v3, Practice Teaching, during the Winter and Spring terms, 1978. These were: C-12, "Employ Oral Questioning Techniques", C-15, "Present an Illustrated Talk", and Writing Multiple-Choice Test Items and Tests, by William A. Williams. The modules and monograph used in the first two terms were again used as references.

The above mentioned Penn State monograph on tests was used because it specifically supported the I. Ed. 19v3 course objective regarding the preparation and use of multiple-choice tests. None of the modules on instructional evaluation were considered to be sufficiently specific regarding the preparation of multiple-choice items.

Each student teacher was required to attain the terminal objectives of modules C-12 and C-15 at a time assigned to him during the term.

Performance of required competencies was evaluated by the university supervisor using the TPAF from the back of the module. The student teacher made four other evaluated presentations to his students. The method of presentation usually alternated so that the student teacher gave a total of three information lessons and three skill lessons. For these presentations, he also adapted and used three different types of teaching aids and prepared and administered three short multiple-choice tests.

The Welch I. Ed. 19v Competencies and the Selected Modules. The fourth objective of this study was to compare the competencies which are found to be unique as well as, appropriate for vocational industrial education teachers with those competencies subjected to experimentation utilizing the Ohio State Centers' delivery system. Dr. Fred Welch has identified the following categories and classes of performance elements as particularly appropriate for development in Industrial Education 19v.

Instruction-Execution:	C-1 Direct student activities C-2 Promote group interaction C-3 Apply basic instruction strategies C-4 Employ teacher-centered methods of presentation
Management:	E-6 Control student behavior
Guidance:	F-2 Promote constructive inter-relationships with students.
Professional Role and Development:	I-4 Assists with general school duties

Considering the modules used in I. Ed. 19vl: "Develop a Lesson Plan" related to performance element C-3. "Demonstrate a Manipulative Skill" and "Present Information with Overhead and Opaque Materials" related to performance elements C-1, C-2, C-3, and C-4.

Considering the additional modules used in I. Ed. 19v2: "Provide for Student Safety" related to performance elements E-6, F-2, and I-4. "Organize the Vocational Laboratory" and "Manage the Vocational Laboratory" related to performance element E-6.

Considering the additional modules selected for the final term of the course: "Employ Oral Questioning Techniques" related to performance elements C-1, C-2, C-3 and C-6. "Present an Illustrated Talk" relates to performance elements C-1, C-2, C-3 and C-4.

It is not suggested that this set of relationships covered all competencies developed or improved in I. Ed. 19v; certainly others were affected to some degree.

Comments. To some degree unknown ground was explored in adapting the Ohio State modules for use in the Observation and Practice Teaching course. It was felt that the modules were useful in that they were up-to-date, applied to all fields of vocational education and emphasized the performance aspect of teaching. It is hoped that the modules will continue to be revised, particularly to remedy some omissions in content and to coordinate performance assessment checklists. The success achieved in the use of these modules was apparent based upon the rating the students assigned to this course (see Appendix F).

Derivation of Competency Assessment Criteria

The fifth and last objective of this project was to derive competency assessment criteria for each of the verified competencies associated with existing courses in vocational industrial education. The formal courses being dealt with in this study were Industrial Education 19v1, Demonstration Teaching; Industrial Education 19v2, Observation of teaching; and Industrial Education 19v3, Practice Teaching. Competency statements were written for each of

the three courses and assessment criteria were established for each of the competency statements. Student performance in Industrial Education 19v1 and Industrial Education 19v2 was evaluated in a simulated classroom environment. Final performance evaluation for all competencies was delayed until Industrial Education 19v3 was scheduled, and was accomplished in a real classroom setting. The following sections outline the competency statements and the related criteria statements by course number.

Industrial Education 19v1 (Demonstration Teaching)

By the conclusion of I. Ed. 19v1, Demonstration Teaching, each student will have demonstrated his mastery of the following competencies by performing in a simulated, secondary classroom/laboratory environment.

1. Competency Statement B-3: The student will write and sequence objectives for four (4) information lessons and four (4) demonstration lessons:

   Criteria
   a. The objectives were written according to specified criteria that were given to each student at the beginning of the course.
   b. The objectives were written so that they were clearly understood by professional teacher educators and by other teachers.
   c. The objectives were sequenced to maximize learning.
   d. The objectives were capable of being made operational through instruction and evaluation.

2. Competency Statement B-9: The student will write four (4) information lesson plans and four (4) demonstration lesson plans based on the objectives that were developed according to the criteria established within competency statement number one (1).

   Criteria
   a. The lesson plans were written according to a format provided by the instructor at the beginning of the course.
   b. The lesson plans were written using correct English language construction and spelling.
   c. The lesson plans were written so that the required delivery time did not exceed twenty (20) minutes.

d. The lesson plans were written so that another teacher of the same subject would be able to deliver the same content when using these lesson plans.
e. The lesson plans were written so that another teacher, an administrator, or a supervisor who read them would clearly understand their purpose, content and method of delivery.

3. Competency Statements C-12 and C-14: The student will present two (2) information lessons before his peers.

Criteria
a. Each lesson did not exceed twenty (20) minutes.
b. The lesson plans used were selected from the four (4) required and approved information lesson plans.
c. The lessons were evaluated and certified acceptable by the teacher according to pre-specified criteria.
d. The lessons were evaluated and certified acceptable by the student according to pre-specified criteria.

4. Competency Statement C-13: The student will present two (2) demonstration lessons of a manipulative skill before his peers.

Criteria
a. Each lesson did not exceed twenty (20) minutes.
b. The lesson plans used were selected from the four (4) required and approved demonstration lesson plans.
c. The lessons were evaluated and certified acceptable by the teacher according to pre-specified criteria.
d. The lessons were evaluated and certified acceptable by the student according to pre-specified criteria.

5. Competency Statement C-7: The student will demonstrate his skill in the use of oral questioning techniques when presenting lessons before his peers.

a. The student demonstrated knowledge of the theories and methods of oral questioning through written tests and discussions.
b. The student wrote oral questions for each required lesson and incorporated them at appropriate points within each lesson plan.
c. During each required lesson delivery, the student employed psychologically sound questioning strategies.

6. During the four (4) required lesson presentations (including the eight (8) required lesson plans) the student will demonstrate the ability to produce and/or use the following instructional materials:

a. Operation sheets (Competency B-14): The student wrote and used at least one operation sheet.
b. Job sheets (Competency B-15): The student wrote and used at least one job sheet.
c. Information sheet (Competency B-18): The student wrote and used at least one information sheet.
d. Spirit Duplicator (Competency B-20): The student prepared at least one copy of a lesson plan for each member of his group.

e. Copier; i.e. Zerox, 3M (Competencies B-22, C-32): The student produced orginal transparencies to use with at least two of his required lesson presentations.
f. Filmstrips, Slides, and Motion Pictures (Competencies C-18, 19, 20, 21): The student used at least one of these media forms during his required lesson presentations.
g. Chalkboard (Competency C-23): The student demonstrated his skill using the chalkboard during three of the four required lesson presentations.
h. The student demonstrated his knowledge of the theory and application of media through written evaluations and discussions.

Industrial Education 19v2 (Observation Teaching)

By the conclusion of Industrial Education 19v2, Observation Teaching, each student will have demonstrated his mastery of the following managerial competencies by performing in a simulated, secondary classroom/ laboratory environment.

1. Competency Statement E-11: The student will develop and maintain a record of supplies, inventories, and equipment maintenance:

Criteria for the Supply Inventory System

a. The supply inventory system was designed to show who used an item, the date which it was removed from the storage area, the purpose for which it was used, and the quantity remaining in stock.
b. The supply inventory system was designed so that the instructor was notified as soon as a supply item had reached re-order quantity.
c. The supply inventory system was designed so that the control form indicated the following information about the item: 1) The description (or function) of the item, 2) The manufacturer's stock number, 3) The school control number, 4) Unit price, 5) Re-order quantity, 6) Total re-order price, 7) Vendor's name, address, and telephone number.
d. The supply inventory system was cross-referenced with the records of financial transactions (purchase orders).
e. The supply inventory system was cross-referenced with the equipment, tool, and machine records.
f. The supply inventory system was designed so access to supplies and supply records was under the instructor's control.
g. Storage for supplies were adequate and met minimum safety guidelines.

Criteria for the Equipment, Tool and Machine Inventory System

a. The inventory system was subdivided according to equipment, tools, and machines.

b. The inventory system was designed so that the inventory control form indicated the following information about the item: 1) The description of the item, 2) The manufacturer's stock number, 3) The school control number, 4) The quantity on hand, 5) The unit price, 6) The total value (i.e. all hammers), 7) The condition of the item, 8) Vendor's name, address, and telephone number, 9) The date the item was purchased.
c. All equipment, tools, and machines in the laboratory displayed a school control number which was also on the inventory control form.
d. The inventory was cross referenced with the record of financial transactions (purchase orders).
e. Access to the inventory system and to all tools, equipment, and machines was under the instructor's control.

2. Competency Statement E-9: The student will develop and maintain a record of financial transactions:

Criteria
a. The purchase orders were filed by date of purchase and by category (tools, equipment, machines, supplies, and contracted services).
b. The purchase order requests were attached to each purchase order.
c. Copies of correspondence associated with any purchase was attached to the corresponding purchase order.

3. Competency Statement E-14: The student will organize a student personnel file:

Criteria
a. The records complied with all national, state and local laws and policies.
b. Each file contained the student's and parents' names, address, and telephone number; as well as parents' occupations.
c. Each file contained the following: 1) Name, address and telephone number of the sending school, 2) Name and address of the principal and counselor of the sending school.
d. A record of the student's occupational course grades was maintained.
e. Anecdotal records were included within the personnel file and not kept separately.
f. Student records were maintained as mandated by PL 94-142.

4. Competency Statement E-8: The student will develop and implement a long-range plan for obtaining, organizing, and maintaining materials, equipment and facilities:

Criteria
a. The plan was educationally justifiable to both the administration and to the taxpayers.
b. The plan was developed in terms of the community's financial capability.

c. The plan clearly indicated the cost effectiveness of the proposed plan.
d. The plan included operational as well as start-up costs.
e. The plan took into consideration the realities of local politics and taxpayer attitudes.

5. Competency Statement E-3: The student will organize and maintain the physical facilities and instructional resources of the course:

Criteria
a. A detailed, scale drawing of the laboratory layout was submitted.
b. The laboratory organization and layout met all federal, state and local requirements for health and safety.
c. The laboratory was designed for the efficient and safe flow of personnel and materials.
d. Storage was adequate and met all safety and health requirements of the local, state, and federal governments.
e. The laboratory and organization was co-ordinated with long-range expansion plans.

6. Competency Statement E-1: The student will integrate safety and health into each industrial course offering:

Criteria
a. Safety lessons were an integral part of the course.
b. Safety was an integral part of all lesson plans.
c. There was evidence of a procedure to check each student on the safe use of tools, machines, equipment, and supplies.
d. The laboratory conformed to national, state, and local safety and health requirements.

Industrial Education 19v3 (Practice Teaching)

By the conclusion of Industrial Education 19v3, Practice Teaching, each student teacher will have demonstrated his mastery of the following competencies by performing in an actual, secondary classroom/laboratory environment.

1. Competency Statement B-3: The student teacher will write and sequence objectives for three (3) information lessons and three (3) demonstration lessons.

Criteria
a. The objectives were written according to specified criteria that were given to each student at the beginning of the course.
b. The objectives were written so that they were clearly understood by professional teacher educators and by other teachers.
c. The objectives were sequenced to maximize learning.
d. The objectives were capable of being made operational through instruction and evaluation.

2. Competency Statement B-9: The student teacher will write three (3) information lesson plans and three (3) demonstration lesson plans based on the objectives that were developed according to the criteria established within competency statement number one (1).

   Criteria
   a. The lesson plans were written according to a format provided by the resource person at the beginning of the course.
   b. The lesson plans were written using correct English language construction and spelling.
   c. The lesson plans were written so that the required delivery time did not exceed twenty (20) minutes.
   d. The lesson plans were written so that another teacher of the same subject would be able to deliver the same content when using the lesson plans.
   e. The lesson plans were written so that another teacher, an administrator, or a supervisor who read them would clearly understand their purpose, content and method of delivery.

3. Competency Statements C-12 and C-14: The student teacher will present three (3) information lessons before a secondary vocational class.

   Criteria
   a. Each lesson did not exceed twenty (20) minutes.
   b. The lesson plans used were the three (3) required and approved information lesson plans.
   c. The lessons were evaluated and certified acceptable by the resource person according to pre-specified criteria.
   d. The lessons were evaluated and certified acceptable by the student according to pre-specified criteria.

4. Competency Statement C-13: The student teacher will present three (3) demonstration lessons of a manupulative skill before a secondary vocational class.

   Criteria
   a. Each lesson did not exceed twenty (20) minutes.
   b. The lesson plans used were the three (3) required and approved demonstration lesson plans.
   c. The lessons were evaluated and certified acceptable by the resource person according to pre-specified criteria.
   d. The lessons were evaluated and certified acceptable by the student according to pre-specified criteria.

5. Competency Statement C-7: The student teacher will demonstrate his skill in the use of oral questioning techniques when presenting lessons before a secondary vocational class.

   a. The student wrote oral questions for each required lesson and incorporated them at appropriate points within each lesson plan.
   b. During each required lesson delivery, the student employed psychologically sound questioning strategies.

6. During the six (6) required lesson presentations, the student will demonstrate the ability to produce and/or use the following instructional materials:

   a. Operation sheets (Competency B-14): The student wrote and used at least one operation sheet.
   b. Job sheets (Competency B-15): The student wrote and used at least one job sheet.
   c. Information sheet (Competency B-18): The student wrote and used at least one information sheet.
   d. Copier; i.e. Zerox, 3M (Competencies B-22, C-32): The student produced original transparencies to use with at least two of his required lesson presentations.
   e. Filmstrips, Slides, and Motion Pictures (Competencies C-18, 19, 20, 21): The student used at least one of these media forms during his required lesson presentations.
   f. Chalkboard (Competency C-23): The student demonstrated his skill using the chalkboard during all of the required lesson presentations.

7. Competency Statement E-11: The student teacher will develop and maintain a record of supplies, inventories, and equipment maintenance:

   Criteria for the Supply Inventory System

   a. The supply inventory system was designed to show who used an item, the date which it was removed from the storage area, the purpose for which it was used, and the quantity remaining in stock.
   b. The supply inventory system was designed so that the instructor was notified as soon as a supply item had reached re-order quanitity.
   c. The supply inventory system was designed so that the control form indicated the following information about the item: 1) The description (or function) of the item, 2) The manufacturer's stock number, 3) The school control number, 4) Unit price, 5) Re-order quanitiy, 6) Total re-order price, 7) Vendor's name, address, and telephone number.
   d. The supply inventory system was cross-referenced with the records of financial transactions (purchase orders).
   e. The supply inventory system was cross-referenced with the equipment, tool, and machine records.
   f. The supply inventory system was designed so access to supplies and supply records was under the instructor's control.
   g. Storage for supplies were adequate and met minimum safety guidelines.

   Criteria for the Equipment, Tool and Machine Inventory System

   a. The inventory system was subdivided according to equipment, tools, and machines.

b. The inventory system was designed so that the inventory control form indicated the following information about the item: 1) The description of the item, 2) The manufacturer's stock number, 3) The school control number, 4) The quantity on hand, 5) The unit price, 6) The total value (i.e. all hammers), 7) The condition of the item, 8) Vendor's name, address, and telephone number, 9) The date the item was purchased.
c. All equipment, tools, and machines in the laboratory displayed a school control number which was also on the inventory control form.
d. The inventory was cross referenced with the record of financial transactions (purchase orders).
e. Access to the inventory system and to all tools, equipment, and machines was under the instructor's control.

8. Competency Statement E-9: The student teacher will develop and maintain a record of financial transactions:

Criteria
a. The purchase orders were filed by date of purchase and by category (tools, equipment, machines, supplies, and contracted services).
b. The purchase order requests were attached to each purchase order.
c. Copies of correspondence associated with any purchase was attached to the corresponding purchase order.

9. Competency Statement E-14: The student teacher will organize a student personnel file:

Criteria
a. The records complied with all national, state and local laws and policies.
b. Each file contained the student's and parents' names, address, and telephone number; as well as parents' occupations.
c. Each file contained the following: 1) Name, address and telephone number of the sending school, 2) Name and address of the principal and counselor of the sending school.
d. A record of the student's occupational course grades was maintained.
e. Anecdotal records were included within the personnel file and not kept separately.
f. Students records were maintained as mandated by PL 94-142.

10. Competency Statement E-8: The student teacher will develop and implement a long-range plan for obtaining, organizing, and maintaining materials, equipment and facilities:

Criteria
a. The plan was educationally justifiable to both the administration and to the taxpayers.
b. The plan was developed in terms of the community's financial capability.
c. The plan clearly indicated the cost effectiveness of the proposed plan.
d. The plan included operational as well as start-up costs.
e. The plan took into consideration the realities of local politics and taxpayer attitudes.

11. Competency Statement E-3: The student teacher will organize and maintain the physical facilities and instructional resources of the course:

Criteria
a. A detailed, scale drawing of the laboratory layout was available.
b. The laboratory organization and layout met all federal, state and local requirements for health and safety.
c. The laboratory was designed for the efficient and safe flow of personnel and materials.
d. Storage was adequate and met all safety and health requirements of the local, state, and federal governments.
e. The laboratory layout and organization was co-ordinated with long-range expansion plans.

12. Competency Statement E-1: The student teacher will integrate safety and health into each industrial course offering:

Criteria
a. Safety lessons were an integral part of the course.
b. Safety was an integral part of all lesson plans.
c. There was evidence of a procedure to check each student on the safe use of tools, machines, equipment, and supplies.
d. The laboratory conformed to national, state, and local safety and health requirements.

13. Competency Statement C-24: The student teacher will direct shop or laboratory activities:

Criteria
a. Jobs or projects were assigned to students according to a pre-determined plan.
b. Job sheets and/or operation sheets were used.
c. Performance tests and evaluations were developed and used for each laboratory activity.
d. Student laboratory duty assignments (tool room, supply room, clean-up, etc.) were posted.
e. Each student was engaged in productive work during the laboratory period.
f. Discipline was evident throughout the laboratory period.

g. All students (as well as the student teacher) wore eye protection while in the laboratory.
h. All machine guards and other safety devices were in use and in proper working condition.
i. The student teacher worked with small groups and with individuals during the laboratory period.

CHAPTER III

ANALYSIS OF THE SURVEY DATA

Introduction

Twelve hundred and twenty-eight (1228) in-service industrial arts education teachers and vocational industrial education teachers from the Central Region of Pennsylvania were sent one of five survey instruments containing 34 or 35 competency statements. The teachers were requested to rate each of the competency statements based upon the following three questions:

1. Do you do this on your present job?
2. Is this fundamental for a first year teacher?
3. Should an experienced teacher be able to do this?

Across all five survey instruments, a total of 173 competency statements are represented and classified into nine broad categories. It was determined that the data generated by the survey would be evaluated at the category level as well as at the individual competency level.

Survey Form Comparison

Each of the nine categories of competency statements were approximately equally represented on each of the five survey forms, and the individual competency statements within each category were randomly assigned to one of the five survey instruments. Furthermore, the survey instruments were randomly assigned to in-service teachers in the field for response. It appeared appropriate to make a comparison across forms and competency statement categories for each of the three response types in order to confirm the internal consistency of each of the survey forms.

Table 5 compares the five survey forms with each of the nine competency categories by listing the combined mean scores of both the industrial arts education teachers and the vocational industrial education teachers. The mean scores from the survey forms were calculated and form comparisons were made based upon response type 1 (do you do this on your present job.) Table 6 and Table 7 provide data which permit similar form comparisons to be made based upon response type 2 and response type 3 respectively.

Examination of these Tables indicates that the results of the form comparisons are consistent for all the response types. Forms T2, T3 and T4 are virtually the same while Forms T1 and T5 produced somewhat higher ratings. An appropriate level of internal consistency has been maintained in the development and distribution of the five survey forms.

Analysis of the Data by Categories

An analysis of the survey data was first accomplished using the nine competency categories as the unit of analysis. This step was taken to allow a more stable and interpretable explanation of the results generated from the study. In addition, making value judgements about differences among nine categories is handled more readily than among 173 competencies.

Tables 8 and 9 summarize the ratings made by the industrial arts education teachers and the vocational industrial education teachers. All item responses were grouped into competency categories and each respondent received a raw score sum (1 = No, 2 = yes) for each of the nine categories. Since different competency categories had different numbers of competencies, all category sums were divided by the number of competency statements in the category to derive an average competency statement score per category (Range: 1 to 2). These averages were weighted by sample

Table 5
Five Survey Form Comparisons by Combined
Mean Scores of Industrial Arts and
Vocational Industrial Education
Teachers for Response Type 1

Survey Form Number

Competency Category	T1	T2	T3	T4	T5
A	1.67	1.67	1.87	1.91	1.66
B	1.82	1.87	1.80	1.79	1.77
C	1.93	1.93	1.74	1.67	1.56
D	1.81	1.61	1.85	1.80	1.78
E	1.81	1.76	1.75	1.67	1.64
F	1.68	1.76	1.48	1.61	1.78
G	1.69	1.47	1.40	1.36	1.73
H	1.54	1.45	1.36	1.33	1.54
I	1.86	1.51	1.82	1.80	1.76
$\bar{X}$	1.75	1.67	1.67	1.66	1.69

Table 6
Five Survey Form Comparisons by Combined
Mean Scores of Industrial Arts and
Vocational Industrial Education
Teachers for Response Type 2

Competency Category	Survey Form Number				
	T1	T2	T3	T4	T5
A	1.42	1.48	1.53	1.83	1.53
B	1.69	1.77	1.65	1.63	1.77
C	1.80	1.84	1.81	1.58	1.62
D	1.73	1.46	1.70	1.62	1.70
E	1.79	1.66	1.58	1.60	1.64
F	1.59	1.67	1.37	1.52	1.72
G	1.56	1.34	1.42	1.22	1.61
H	1.43	1.46	1.15	1.31	1.57
I	1.84	1.33	1.77	1.57	1.72
$\bar{X}$	1.65	1.56	1.55	1.54	1.65

Table 7
Five Survey Form Comparisons by Combined
Mean Scores of Industrial Arts and
Vocational Industrial Education
Teachers for Response Type 3

Survey Form Number

Competency Category	T1	T2	T3	T4	T5
A	1.89	1.82	1.93	1.96	1.87
B	1.93	1.88	1.93	1.89	1.92
C	1.92	1.91	1.93	1.85	1.92
D	1.90	1.81	1.93	1.88	1.91
E	1.91	1.81	1.88	1.81	1.77
F	1.82	1.85	1.67	1.81	1.89
G	1.84	1.84	1.78	1.61	1.93
H	1.85	1.77	1.63	1.68	1.86
I	1.94	1.87	1.92	1.79	1.88
$\bar{X}$	1.89	1.84	1.84	1.81	1.88

Table 8
Comparison of Three Response Types and Competency Categories by Mean Category Score for the Industrial Arts Education Teachers

Competency Categories	RESPONSE TYPE			
	1	2	3	$\bar{X}$
A	1.713	1.546	1.886	1.715
B	1.789	1.743	1.904	1.812
C	1.712	1.741	1.892	1.782
D	1.725	1.669	1.878	1.757
E	1.721	1.700	1.860	1.757
F	1.580	1.556	1.774	1.637
G	1.472	1.465	1.811	1.576
H	1.327	1.351	1.709	1.462
I	1.780	1.718	1.902	1.800
$\bar{X}$	1.647	1.608	1.845	1.700

$r_{1,2} = .93$
$r_{1,3} = .93$
$r_{2,3} = .85$

Table 9

Comparison of Three Response Types and Competency Categories by Mean Category Score for the Vocational Industrial Education Teachers

COMPETENCY CATEGORIES	RESPONSE TYPE			
	1	2	3	$\bar{X}$
A	1.800	1.567	1.901	1.756
B	1.843	1.663	1.917	1.808
C	1.787	1.726	1.919	1.811
D	1.820	1.619	1.890	1.776
E	1.738	1.614	1.823	1.725
F	1.740	1.593	1.836	1.723
G	1.602	1.344	1.795	1.580
H	1.558	1.419	1.804	1.594
I	1.725	1.586	1.861	1.724
$\bar{X}$	1.735	1.570	1.861	1.722

$r_{1,2} = .86$

$r_{1,3} = .88$

$r_{2,3} = .81$

size, and averaged across the five survey forms. These competency category by response type averages are listed in the appropriate cells of Tables 8 and 9. The Statistical Package for the Social Sciences (SPSS) computer program, available at the Computation Center at The Pennsylvania State University, was used to generate the row and column means and correlations that appear in the cited tables. The correlations that appear at the bottom of the tables represent correlations between the data in each pair of columns.

Several observations are worth highlighting. First, both groups gave decidedly higher ratings to response type 3; in fact, these ratings were approaching the ceiling (maximum = 2 = yes). Second, competency categories F, G, and H had considerably lower ratings from both groups than did the other categories; several of these ratings fell below the neutral point (1.5). Third, the competency categories were ordered (from highest $\bar{X}$'s to lowest $\bar{X}$'s) consistently the same way regardless of the response type. The inter-correlation among the response types provide this evidence.

Tables 10 and 11 represent the data reported in Table 8 and Table 9 in the form of rank order. Low rank values are interpreted as higher average item scores. It is interesting to note that the industrial arts teachers scored competency statements in category I, Professional Role and Development, more positively than did the vocational industrial education teachers. In addition, the industrial arts teachers' responses indicated less concern for category A, Program Planning, Development, and Evaluation, than did the vocational industrial education teachers.

Tables 12, 13 and 14 present statistical comparisons between the responses of industrial arts education teachers and the responses of vocational industrial education teachers by competency categories and response types. These tables represent a rearrangement of Tables 8 and 9. Each cell in Table 8 was

Table 10
Rank Order of Three Response Types by
Competency Categories for
Industrial Arts Education Teachers

COMPETENCY CATEGORIES	RESPONSE TYPE			
	1	2	3	OVERALL RANKING
A	5	7	4	6
B	1	1	1	1
C	6	2	3	3
D	3	5	5	4
E	4	4	6	5
F	7	6	9	7
G	8*	8*	7	8
H	9*	9*	8	9*
I	2	3	2	2

* Actual Rating Below the Neutral Point (1.5)

Table 11
Rank Order of Three Response Types by
Competency Categories for
Vocational Industrial Educational Teachers

COMPETENCY CATEGORIES	RESPONSE TYPE			
	1	2	3	OVERALL RANKING
A	3	7	3	4
B	1	2	2	2
C	4	1	1	1
D	2	3	4	3
E	6	4	7	5
F	5	5	6	7
G	8	8*	9	9
H	9	9*	8	8
I	7	6	5	6

* Actual Rating Below the Neutral Point (1.5)

Table 12

Comparison Between Industrial Arts Education Teachers and Vocational Industrial Education Teachers for Response Type 1 by Competency Categories

COMPETENCY CATEGORIES	INDUSTRIAL ARTS	VOC. IND. ED.	$\bar{X}$
A	1.713	1.800	1.757*
B	1.789	1.843	1.816*
C	1.712	1.787	1.750*
D	1.725	1.820	1.773*
E	1.721	1.738	1.730
F	1.580	1.740	1.660*
G	1.472	1.602	1.537*
H	1.327	1.558	1.443*
I	1.780	1.725	1.753**
$\bar{X}$	1.647	1.735	1.691

* Significant .01 Level

** Significant .05 Level

r (IA) (VIED) = .89

Table 13

Comparison Between Industrial Arts Education Teachers and Vocational Industrial Education Teachers for Response Type 2 by Competency Categories

COMPETENCY CATEGORIES	INDUSTRIAL ARTS	VOC. IND. ED.	$\overline{X}$
A	1.546	1.567	1.557
B	1.743	1.663	1.703*
C	1.741	1.726	1.734
D	1.669	1.619	1.644
E	1.700	1.614	1.657*
F	1.556	1.593	1.575
G	1.445	1.344	1.395*
H	1.351	1.419	1.385
I	1.718	1.586	1.652*
$\overline{X}$	1.608	1.570	1.589

* Significant .01 Level

r (IA) (VIED) = .87

Table 14

Comparison Between Industrial Arts Education Teachers and Vocational Industrial Education Teachers for Response Type 3 by Competency Categories

	INDUSTRIAL ARTS	VOC. IND. ED.	$\bar{X}$
A	1.886	1.901	1.894
B	1.904	1.917	1.911
C	1.892	1.919	1.906
D	1.878	1.890	1.884
E	1.850	1.823	1.837
F	1.774	1.836	1.805*
G	1.811	1.795	1.803
H	1.709	1.795	1.757*
I	1.902	1.861	1.882
$\bar{X}$	1.845	1.861	1.853

* Significant .01 Level

r (IA) (VIED) = .78

compared with the corresponding cell in Table 9 for purposes of running an independent t test. These comparisons represent average competency category ratings by the industrial arts education teachers versus those by the vocational industrial education teachers. To compute the t's, weighted variances across survey forms were calculated (means and standard deviations were combined across forms). Certain observations concerning these tables are in order. First, in terms of response type 1, the vocational industrial education teachers have consistantly given higher ratings than did the industrial arts education teachers; the opposite pattern appeared for response type 2. Because of the ceiling effect on standard deviation, there were only two significant differences between the two groups of respondents from response type 3; however, those that did appear indicated higher ratings by the vocational industrial education group. Secondly, the correlations across the response types indicated that both groups ordered the mean competency category score in a similar fashion. That is, the competency categories that the industrial arts education teachers rated most highly were also most highly rated by the vocational industrial education teachers and vice versa.

Analysis of Data by Competency Statement

Introduction. The sixth objective of this study was to verify competencies which are unique to and common between specific fields of study in industrial education. Data gathered from the returned survey instruments were processed at The Pennsylvania State University Computation Center. The percent of agreement and disagreement (yes and no) between industrial arts education (I.A. Ed.) teachers and vocational industrial education (VIED) teachers was calculated for each competency statement for each of the three following response types:

1. Do you do this on your present job?
2. Is this fundamental for a first year teacher?
3. Should an experienced teacher be able to do this?

This data is presented in Appendix D in conjunction with the final list of competency statements.

Table 15 is a summary presentation of the data for each response type. The survey classified each competency statement within one of three possible groups: 1) a competency unique to either VIED or IA Ed. teachers; 2) a competency statement that was commonly agreed upon; 3) or a competency statement that was rejected by both groups:

1. A unique competency is defined as a statement that has 50% or greater "yes" responses by one group of teachers (IA Ed. or VIED) and *less* than 50% "yes" responses by the other group of teachers (IA Ed. or VIED).
2. A common competency is defined as a statement that has received 50% or greater "yes" responses *both* groups.
3. A rejected competency is defined as a statement that has received *less* than 50% "yes" responses by *both* groups.

Response Type 1. Vocational industrial education teachers and industrial arts education teachers agreed on the relative importance of 130 competency statements. Industrial arts teachers only differed from their vocational industrial education counterparts on a single competency statement, "Administer first aid to injured students, E-13." This result was rather surprising since it seemed as if that statement would be common to both groups.

The 26 competency statements identified as unique to vocational industrial education teachers were almost exclusively trade related statements. However, it is interesting to note that competency

Table 15

Numerical Comparison of Competency Statements by Status and Response Type

	Unique		Common	Reject	Totals
	VIED	IA Ed.			
Response Type 1	26(15%)	1(.6%)	130(75%)	16(9.2%)	173
Response Type 2	9(5%)	6(3%)	129(74.6%)	29(16.8%)	173
Response Type 3	2(1%)	0(0%)	171(98.8%)	00(0%)	173

statement C-22, "Present information with the aid of a chalkboard," was identified as being a competency unique to vocational industrial education teachers.

Response Type 2. There was greater agreement between IA Ed. and VIED teachers as to what is fundamental for a first year teacher than there was to what they do on their present job. While the number of common competency statements remained virtually constant in number, the set of unique competencies for both groups combined dropped significantly. Further, the competencies identified as unique to both groups were obviously along the dimensions where industrial arts education and vocational industrial education differ: education for the purpose of employment versus education for the purpose of non-specific, general knowledge and skills. Finally, those competencies that were rejected were skills that one would not reasonably expect a beginning teacher to exhibit as fundamental for a first year teaching success.

Response Type 3. Apparently, the teacher skills required of experienced IA Ed. and VIED teachers are viewed as being almost identical by the profession. Both groups agreed that 171 of 173 competencies (99%) were requisite skills for experienced teachers. None of the competencies were rejected by either group, and the two competencies that were identified as unique to VIED can reasonably be interpreted as skills required to gather student employment data.

Table 16 below is a summary of the competency statements by competency number that have been identified and rejected for first year teachers of industrial arts education and vocational industrial education. The statement associated with each competency number can be found in Appendix D.

Table 16

A Summary of Responses to Response Type 2 - "Is This Fundamental for a First Year Teacher?"

Unique VIED Competencies	Unique IA Ed. Competencies	Competencies Common to Both VIED and IA Ed.	Rejected Competencies
	F 18	A 1, 4, 6, 9, 10	A 2, 3, 5, 7, 15
A 8	G 1 & 9	A 11, 12, 13, 14, 16	
D 3	H 3		C 17, 33, 39
F 3, 10, 11, 12 & 16	I 10 & 15	B 1 through 23	
H 1 & 5			D 7, 8, 14, 17
		C 1 through 16	
		C 18 through 32	E 4 & 10
		C 34 through 38	
		C 40 & 41	F 4, 13, 14, 17, 19, 27
		D 1, 2, 4, 6	G 3, 4, 6, 7
		D 9 through 13	
		D 15, 16, 18, 19	H 6
		E 1, 2, 3	I 5 & 6
		E 5 through 9	
		E 11 through 14	
		F 1, 2, 5, 6, 7, 8, 9, 15	

Table 16 (Cont'd)

Unique VIED Competencies	Unique IA Ed. Competencies	Competencies Common to Both VIED and IA Ed.	Rejected Competencies
		F 20, 21, 22, 23, 24, 25, 26, 28 G 2, 5, 8 H 2, 4, 7, 8 I 1, 2, 3, 4, 7, 8, 9 I 11, 12, 13, 14	

Verified List of Competencies for Vocational Industrial Education Teachers

The seventh objective of this study was to verify a final list of teacher competencies appropriate to the preparation of Vocational Industrial Education teachers at The Pennsylvania State University. The intent of this objective was to determine those teacher competencies that are most important in the preparation of beginning Vocational Industrial Teachers as perceived by in-service Vocational Industrial Education teachers.

The second question on each of the five survey instruments asked the respondents to indicate whether they thought the cited competencies were fundamental for a first year teacher. Mean scores were calculated for each of the 173 competency statements based upon the responses given to this question and a rank order of importance was established.

An analysis of this data was first made on the basis of competency categories. Table 11 presents a rank order of competency categories for response type 2. The reader will note that in-service Vocational Industrial Education teachers identified the competencies in categories C, B, and D (Instructional Execution, Planning and Evaluation) as being most fundamental to beginning teachers.

A second analysis of the data was made based upon the individual competency statements. Each of the 173 competency statements was ranked according to the percent of Vocational Industrial Education teachers responding "yes" to the competency statements being fundamental to beginning teachers. Table 17 presents the list of 173 competency statements in rank order as perceived by Vocational Industrial Education teachers to be important for beginning Vocational Industrial Education teachers. Note that the percent of agreement on the fundamental nature

Table 17

Rank Order of 173 Competency Statements as Perceived by In-Service Vocational Industrial Education Teachers to be Fundamental in the Preparation of Beginning Teachers

Rank Order	Competency Number	% Yes Response	Rank Order	Competency Number	% Yes Response
1	E - 6	100.0	21.5	A - 9	89.8
2	D - 18	98.4	21.5	C - 20	89.8
3.5	D - 23	98.3	23	B - 9	89.2
3.5	C - 25	98.3	24	C - 2	89.0
5.5	C - 18	96.7	25	A - 11	88.9
5.5	C - 24	96.7	26	F - 26	88.7
7	C - 7	95.7	27	C - 19	88.3
8	C - 13	95.4	28	C - 6	87.8
9	A - 14	95.2	30	C - 12	87.7
10.5	A - 10	94.5	30	C - 14	87.7
10.5	E - 1	94.5	30	E - 5	87.7
12	D - 12	94.4	32	C - 9	87.3
13	C - 28	92.6	33	C - 3	87.1
14	C - 16	90.8	34	D - 2	86.5
15.5	C - 32	90.7	36	G - 2	86.3
15.5	E - 11	90.7	36	I - 1	86.3
17.5	F - 1	90.3	36	I - 2	86.3
17.5	F - 25	90.3	38	I - 7	86.2
19.5	D - 16	90.2	39	D - 4	86.1
19.5	G - 8	90.2	40	F - 8	85.9

Table 17 (Cont'd)

Rank Order	Competency Number	% Yes Response	Rank Order	Competency Number	% Yes Response
41	D - 6	85.7	63	B - 22	68.9
42	B - 5	84.6	100	C - 40	68.3
43	C - 11	84.4	101	I - 13	67.8
44.5	F - 2	83.6	102	A - 6	67.7
44.5	F - 22	83.6	103	C - 1	67.6
46	C - 15	83.1	104	E - 12	67.3
47	F - 7	83.1	105	A - 8	67.2
48	C - 23	83.0	106.5	B - 17	66.7
50	A - 4	82.3	106.5	E - 14	66.7
50	B - 23	82.3	108	B - 13	65.5
50	F - 23	82.3	109	F - 5	64.9
52	F - 10	81.2	110	D - 10	64.4
54	B - 16	81.1	111	E - 9	63.6
54	B - 18	81.1	112	H - 7	63.3
54	D - 15	81.1	113	B - 4	62.1
56	D - 1	80.8	114	A - 13	62.3
57	I - 8	80.7	115	F - 11	61.9
58	I - 14	80.6	116	I - 11	61.5
59	C - 41	80.0	117	F - 20	60.4
60	B - 3	79.5	118	D - 3	60.0
61	C - 21	79.3	119	C - 38	59.0
62	C - 5	79.2	120	G - 5	58.9

Table 17 (Cont'd)

Rank Order	Competency Number	% Yes Response	Rank Order	Competency Number	% Yes Response
121	H - 8	58.3	143	H - 3	46.0
122	F - 16	57.9	144	I - 10	45.1
123	H - 2	57.8	145	D - 14	44.0
124.5	B - 12	56.9	146	G - 6	43.4
124.5	H - 1	56.9	147	C - 33	40.4
126	D - 13	56.6	148	C - 39	40.0
127	C - 30	55.8	149	G - 1	39.1
128	B - 21	55.7	150	F - 14	38.2
129	D - 5	55.6	151	G - 3	36.5
130	F - 3	55.1	152	I - 5	36.1
131	E - 13	54.8	153	A - 3	35.2
132	F - 21	53.7	155	E - 10	34.0
133	C - 31	52.9	155	F - 19	34.0
134.5	C - 37	52.5	155	H - 6	34.0
134.5	D - 19	52.5	157.5	C - 17	33.3
137	E - 7	50.9	157.5	D - 7	33.3
137	E - 8	50.9	159	F - 27	32.8
137	H - 5	50.9	160.5	B - 19	32.1
139	A - 2	49.3	160.5	G - 4	32.1
140.5	F - 17	49.1	162	D - 17	31.7
140.5	F - 18	49.1	163	G - 9	29.3
142	I - 15	46.7	164	D - 8	28.6

Table 17 (Cont'd)

Rank Order	Competency Number	% Yes Response	Rank Order	Competency Number	% Yes Response
165	A - 5	27.9	169.5	E - 4	25.4
166	A - 15	27.1	171	F - 4	16.4
167.5	F - 13	26.8	172	G - 7	13.5
167.5	H - 4	26.8	173	I - 6	11.3
169.5	A - 7	25.4			

of the 173 competency statements to the preparation of beginning Vocational Industrial Education teachers ranged from 100% agreement at the top end of the rank order to a low of 11.3% agreement of the bottom end of the rank order. A clear distinction is indicated between the most important and least important competencies for beginning teachers.

Additional analysis which bears upon the significance of the relative importance of each of the competency statements to the preparation of beginning Vocational Industrial Education teachers may be made by examining the percent of yes responses to the questions, should experienced teachers be able to do this and do you do this on your present job? A highly positive yes response was received to the first question with 100% agreement on the first 25 competency statements and 54.4% agreement on the lowest ranked competency statement. The range in the rank order of % yes responses to the question concerning current practice was much broader and ran from a high of 100% agreement to a low of 15.8% agreement. It appears that although in-service Vocational Industrial Education teachers perceive all 173 competency statements to

be important to experienced teachers, certain of the competencies are not being practiced in every day teaching. The rank order of competencies based upon the % of yes responses to the two questions discussed in this paragraph are not provided in this report. A copy of each is on file in the project Directors' office.

CHAPTER IV

SUMMARY AND CONCLUSIONS

Summary

Introduction

> ... a trainee does not learn how to teach in pre-service training. There is a lot that the trainee can learn in pre-service which will be of utility to the teacher in the classroom. But the teacher really learns how to teach in the first three years in the classroom - particularly the first. (Koehler-1977)

In-service vocational industrial education teachers in Pennsylvania are generally recruited from industry, have accrued a considerable amount of occupational experience in the subject specialty they wish to become certified to teach and have completed a minimum amount of professional preparation for teaching. A system of teacher education which will permit in-service vocational industrial education teachers to gain pedagogical skills which are directly related and immediately applicable to every day operation of classrooms is essential. Consideration of Competency Based Teacher Education as an alternative to the more traditional approach in teacher education of formal course work is warranted.

The Problem

The problem was to initiate preliminary steps inherent in implementing a system of CBTE in Industrial Education at The Pennsylvania State University. Elements of the problem consisted of reviewing existing materials pertaining to CBTE, formating separate lists of competency statements for industrial education teachers, implementing selected aspects of The Ohio State Center's CBTE delivery system into the ongoing program at The Pennsylvania State University, comparing competencies

found to be unique with those being stressed through the utilization of The Ohio State Centers' modules, deriving competency assessment criteria for competencies being stressed in the ongoing program of teacher education, verifying teacher competencies which are unique to and common among specific fields of study in industrial education, and verifying a final list of teacher competencies appropriate to the preparation of vocational industrial education teachers by The Pennsylvania State University.

Procedure

Computer searches through the Computer Based Bibliographic Search Service (CBBSS) and the Vocational Education Information Network (VEIN) produced 100 citations with abstracts pertaining to Competency/Performance Based Teacher Education. Visits by project staff to Temple University and the University of Pittsburgh for the purpose of establishing contemporary practice in CBTE were made. Validated lists of competency statements were requested and received from five separate sources for the purpose of generating composite lists of competency statements for vocational industrial education and industrial arts education teachers.

Each of the composite lists of statements was examined for similar items, individual items were rewritten to establish a uniform level of clarity, and the parallel lists of statements were examined for common and unique items. A combined list of competency statements unique to and common between vocational education teachers and industrial arts education teachers was developed. This combined list of statements was validated by vocational industrial education and industrial arts education teacher educators, and the list was then field tested. The final list of combined competency statements contained 173 items.

Eight CBTE Modules that were developed by The Ohio State Center for vocational education were used on an experimental basis in conjunction with three existing courses at The Pennsylvania State University. Forty-one students were enrolled in these courses at three different locations during the 1977-1978 school year. Competency statements validated earlier in the study were keyed to the objectives of the three courses, and The Center Modules were selected for their relationship to these course objectives. Competency assessment criteria were derived for each of the competencies being treated in the three courses.

Five survey instruments were developed which contained 34 or 35 competency statements selected by stratified random sampling from a total of 173 competency statements. These five survey instruments were randomly distributed to 448 in-service vocational industrial education teachers and 780 in-service industrial arts education teachers practicing in the Central Region of Pennsylvania with 72% and 60% rates of return respectively. A comparison of the five survey forms by combined mean scores of both the industrial arts education teachers and the vocational industrial education teachers indicates that an appropriate level of internal consistency had been maintained during the development and distribution of the five survey forms.

The survey data were first analyzed using the nine competency categories as the unit of analysis. The Statistical Package for the Social Science (SPSS) computer program was used to generate the mean scores. The competency categories were rank ordered for both groups of respondents and comparisons were made between the two groups of respondents for the three questions that were raised on the survey instruments. Correlations of .89, .87, and .78 were observed between the two groups for the three response types.

The survey data were then analyzed by competency statement. Competency statements were classified within one of three possible groupings: 1) unique to either vocational industrial education teachers or industrial arts education teachers, 2) common between the two groups, or 3) rejected by both groups. Uniqueness, commonality or rejection of competency statement was based upon the percent of yes responses assigned to each of the three questions by the two groups of teachers. Fifty percent was established as the arbitrary cut-off for detecting the difference or commonality between the two groups of teachers. Finally, the responses from vocational industrial education teachers to the question, "is this fundamental for a first year teacher?", relative to each of the 173 competency statements were organized in rank order based upon the % of yes responses received. A final list of teacher competencies appropriate to the preparation of Vocational Industrial Education teachers was established by rank order.

Findings

A comparison of the three response types was made by averaging competency statement scores per competency category for the industrial arts education teachers and for the vocational industrial education teachers. Both groups of teachers gave decidedly higher ratings to the competency categories when asked, "Should an experienced teacher be able to do this?", then they did when asked, "Do you do this on your present job?", or, "Is this fundamental to a beginning teacher?"

Competency categories F (Guidance), G (School-Community Relations), and H (Student Organziations) received considerably lower ratings from both groups of teachers than did the other categories of competencies. Industrial arts education teachers scored Category I (Professional Role

and Development) much more positively than did their vocational industrial education counterparts, and vocational industrial education teachers scored Category A (Program Planning, Development, and Evaluation) more positively than did the industrial arts teachers.

Independent t tests were made between the industrial arts education teachers and vocational industrial education teachers mean competency category scores and response types. In terms of response type 1 "Do you do this on your present job?", vocational industrial education teachers assigned consistently higher ratings than did the industrial arts teachers. Significant differences between the two groups were recorded at the .01 level for seven of the nine competency categories. In terms of response type 2, "Is this fundamental to a beginning teacher?", industrial arts education teachers assigned consistently higher ratings than did the vocational industrial education teachers. Significant differences between the two groups were recorded at the .01 level for four of the nine competency categories. Only two of the nine competency categories were significantly different for the two groups for Response Type 3, "Should experienced teachers be able to do this?", and these were favored by the vocational industrial education teachers.

Competency statements considered to be unique to or common between industrial arts education teachers and vocational industrial education teachers were identified by examining the percent of yes responses to each of the three questions from each of the two groups of teachers.

In response to the question, "Do you do this on your present job?" the two groups of teachers agree upon the relative importance of 130 of the 173 competency statements. Only one competency statement, E-13 (Administer first aid to injured students) was identified to be unique to industrial arts education teachers while 26 competency statements (almost

exclusively related to vocational industrial education such as organized advisory committees) were identified as being unique to vocational industrial education teachers.

In response to the question, "Is this fundamental to a beginning teacher?", the two groups of teachers agreed upon the relative importance of 129 of the 173 competency statements. Six competency statements were identified as being unique to industrial arts education teachers and nine competency statements were identified as being unique to vocational industrial education teachers. The competency statements identified as unique to either group were along dimensions where the two groups of teachers normally differ.

In response to the question, "Should an experienced teacher be able to do this?", the two groups of teachers agreed upon the relative importance of 171 of the 173 competency statements. Two competency statements, F-13 (Maintain continual follow-up information . . .) and F-27 (Gather student data . . .) were identified as being unique to vocational industrial education teachers and pertain to gathering student employment data.

A final list of teacher competencies appropriate to the preparation of vocational industrial education teachers was established through a rank order of importance of 173 competency statements as perceived by in-service teachers to be fundamental.

Conclusions

> ... One of the critical questions involved in designing and implementing pre- and in-service teacher education programs, namely: What does research say about teacher competency and teacher effectiveness? The answer to that question will be particularly useful for those teacher educators who are ... experimenting with performance of competency-based teacher education programs (Medley - 1977).

An attempt was made in this study to establish the relationship of 173 competency statements to the preparation and performance of industrial arts education teachers and vocational industrial education teachers. Further, the usefulness of CBTE modules developed by The Center for Vocational Educatio in the execution of the course Industrial Education 19v was examined. The following conclusions were drawn from the findings of this study:

1. The inter-correlations among the three response types of .93, .93, and .85 for industrial arts education teachers and .86, .88, and .81 for vocational industrial education teachers indicate that the nine competency categories were ordered consistently the same way in relation to importance. In addition, competency categories B (Instructional Planning), C (Instructional Execution), and D (Instructional Evaluation) received consistently higher ratings from both groups, while competency categories F (Guidance), G (School-Community Relations), and H (Student Vocational Organizations) received consistently lower ratings for both groups. These data support the conclusions that in-service industrial arts education teachers and vocational industrial education teachers perceive the relative importance of teacher competencies in the same manner.
2. The results of analysis of yes responses to the three response types by the two groups of in-service teachers showed that the commonality between the two groups relative to pedigogical competencies was much more prevalent than individual uniqueness. One hundred thirty, 129, and 171 competencies were identified to be common between the two groups for response types 1, 2, and 3 respectively.

For response type 1, "Do you do this on your present job?", only one competency statement was unique to industrial arts education teachers and 26 competency statements were unique to vocational industrial education teachers. For response type 2, "Is this fundamental for a beginning teacher?", Six competency statements were unique to industrial arts education teachers and nine competency statements were unique to vocational industrial education teachers. For response type 3, "Should an experienced teacher be able to do this?", none of the competency statements were unique to industrial arts education teachers and two competency statements were unique to vocational industrial education teachers.

With few exceptions, the competencies identified as unique to either group were along the dimensions by which they normally differ. Therefore, it is concluded that in-service industrial arts education teachers and vocational industrial education teachers perceive common needs so far as teacher preparation and performance are concerned. It appears that a common teacher education program which makes provision for dealing with some few competencies which are unique to the separate groups may be a viable option for consideration at The Pennsylvania State University.

3. The results of the analysis of student responses to the Instruction Evaluation Form (IEF) utilized by The Pennsylvania State University showed that there was marked improvement during the year in student attitude toward the course Industrial Education 19v, utilizing the CBTE Modules developed by The Center for Vocational Education.

An overall student rating of the course places this group of students in the 90th percentile of all students evaluating courses at The Pennsylvania State University during the 1978 Winter Term.

It is concluded that the CBTE Modules developed by The Center for vocational education were successfully infused into an existing vocational industrial education course structure at The Pennsylvania State University.

BIBLIOGRAPHY

Andreyka, Robert E. "The Florida Way: Identification and Validation of Competencies for Trade and Industrial Education Teachers." Journal of Industrial Teacher Education. 14 (Fall 1976): 20-28.

Detwiler, Wayne L. Sr. "Demonstration and Practice Teaching in Vocational Industrial Education." Journal of Industrial Teacher Education. 10 (Fall 1972): 68-78.

Koehler, Virginia. "Projecting for the Future: Teaching Preparation and Research on Teaching." Paper presented to the faculty of the School of Education at the University of Pittsburgh on Faculty Day, Pittsburgh, 1977. p. 2.

Lindsay, Carl A., Morrison, James L., and Kelley, E. James. "Professional Obsolescence: Implications f[illegible] Continuing Professional Education." Adult Education. 25 (1974).

Medley, Donald M. Teacher Competence and Teacher Effectiveness A Review of Process - Product Research. American Association of Colleges for Teacher Education: Washington, D. C. August 1977. pp. iii.

Norton, Robert E., et al. Performance Based Teacher Education: The State of the Art. Columbus, Ohio: The Leader for Vocatonal Education, The Ohio State University, 1978. 21.

Pennsylvania Department of Education. Vocational Education Guidelines for the Application of Federal Funds - Education Amendments of 1976, Public Law 94-482. Harrisburg, Pennsylvania: Department of Education, 1977. 128.

Pennsylvania State University Libraries. "Computer Based Bibliographic Search Service." Pattee Reference News. 7 (Sept. 1977): 1-2.

APPENDIX A

Letter Requesting Released Time From Regular Employment for Advisory Committee Members

Letter of Appreciation to Advisory Committee Members for Agreeing to Serve on the PSU-CBTE Project

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF EDUCATION
Division of Occupational and Vocational Studies
RACKLEY BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

July 14, 1977

Dear

I want to express my appreciation to you for agreeing to serve on our Competency-Based Teacher Education Advisory Committee. The organization and orientation meeting for this committee is scheduled to be held on Wednesday, August 10, 1977 at the University Park Campus of The Pennsylvania State University. We will be meeting at the Penn State Faculty Club beginning at 10:00 a.m. The main purpose of this meeting will be to introduce the committee membership to the Penn State Competency-Based Teacher Education Project. The following agenda will prevail at the meeting.

10:00 a.m. - Welcome and Charge to the Committee
Dr. Robert Andreyka

Vocational Industrial Teacher Education Project Orientation
Dr. Wayne L. Detwiler, Sr.

Industrial Arts Teacher Education Orientation
Dr. John Shemick

12:00 noon - Lunch, Penn State Faculty Club

1:00 p.m. - Project Progress Reports
a. In-service VIED - Mr. Bilderback and Mr. Scofield
b. Needs assessment and scheduling - Mr. Tilton
c. Ind. Arts Teacher Competencies - Mr. Helsel
d. Voc. Ind. Teacher Competencies - Mr. Bilderback

July 14, 1977
Page 2

I am forwarding with this letter a brief description of the Penn State CBTE project for your review and reaction. Please contact me if I can provide any additional information and material relative to your involvement on our advisory committee. See you on August 10, 1977.

Sincerely yours,

Wayne L. Detwiler, Sr.
Project Director

WLD/pes
Enclosure

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF EDUCATION
Division of Occupational and Vocational Studies
RACKLEY BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

September 9, 1977

Dear

The program in Vocational Industrial Education at the Pennsylvania State University has been approved to affect preliminary study of competency-based approaches to vocational teacher education during the current academic year. I know that you are aware of the emphasis being placed upon this delivery system by our colleagues throughout the nation.

The unique personal characteristics of in-service vocational industrial education teachers, and the difficulties we have experienced over time in providing for their continued professional growth and development make a competency-based approach to teacher education appear as a viable alternative to the more traditional methods of preparing teachers. Final conclusions that are drawn from this project, however, must be tempered with sufficient input from a cross-section of practitioners within the realm of vocational education. To this end, an advisory committee has been organized for the purpose of overseeing the project activities. This advisory committee is scheduled to meet on Wednesday, November 2, 1977, Wednesday, February 1, 1978 and Wednesday, May 3, 1978.

As ultimate benefactors of improved approaches to teacher education, in-service teachers who are knowledgeable about the profession and capable of making candid observations must be an active part of this committee membership. I view Mrs. Virginia Stoudnour, Cosmetology teacher on the Altoona Area Vocational Technical School faculty, as one who possess the characteristics and who would make a valuable contribution to our advisory committee membership. Therefore, I am requesting that Mrs. Stoudnour be released from her assigned duties on the dates indicated above for the purpose of participating on the advisory committee for the Pennsylvania State University Competency-Based Teacher Education Project.

Mr. Clair Green
September 9, 1977
Page 2

I shall thank you and your board of school directors in advance for consideration of this request.

Sincerely yours,

Wayne L. Detwiler, Sr.
Project Director

APPENDIX B

Advisory Committee Membership

ADVISORY COMMITTEE MEMBERSHIP
Competency-Based Industrial Teacher Education Project
The Pennsylvania State University
July 1, 1977 to June 30, 1978

PROJECT STAFF

Dr. Robert E. Andreyka, Advisor
Dr. Wayne L. Detwiler, Sr., Project Director
Dr. John Shemick, Consultant
Mr. Edward Bilderback, Graduate Assistant
Mr. Nye Scofield, Graduate Assistant
Mr. Norman Tilton, Graduate Assistant - Summer, 1977
Mr. Larry Helsel, Graduate Assistant - Summer, 1977
Ms. Linda Leeking, Graduate Assistant - Fall, 1977, Winter, Spring, 1978
Mr. Ta Wei Lee, Graduate Assistant - Fall, 1977, Winter, Spring, 1978

ADVISORY COMMITTEE MEMBERS

Mr. Kenneth Swatt, Chief, Development Services Section, Vocational Program Development Division, Bureau of Vocational Education, Department of Education, 111 Executive House, Harrisburg, PA 17126
Dr. Richard Adamsky, Associate Professor, Trade and Industrial Education, Temple University, Room 455 Ritter Hall Annex, Philadelphia, PA 19122
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Mr. John Y. Stoudt, Instructional Leader for Industrial Arts, Norristown Area High School, 1900 Eagle Drive, Norristown, PA 19401
Mr. Earl Zimmerman, Industrial Arts Education Adviser, Bureau of Curriculum Services, Department of Education, 538 Education Building, Harrisburg, PA 17126
Dr. Elizabeth Ray, Professor in Charge/Home Economics Education Program Division of Occupational and Vocational Studies, The Pennsylvania State University, 212 Rackley Building, University Park, PA 16802
Mrs. Virginia Stoudnour, Cosmetology Instructor, Altoona Area Vocational Technical School, 1500 Fourth Avenue, Altoona, PA 16603
Mr. Dale Straub, Assistant Professor of Drafting Technology, Williamsport Area Community College, 1005 West Third Street, Williamsport, PA 17701

GUESTS

Dr. Harold Mitzel, Associate Dean, Research and Graduate Studies, College of Education, The Pennsylvania State University, University Park, PA 16802

APPENDIX C

Letter of Appreciation to Advisory Committee Members
For Serving During the 1977-1978 Fiscal Year

THE PENNSYLVANIA STATE UNIVERSITY
COLLEGE OF EDUCATION
Division of Occupational and Vocational Studies
RACKLEY BUILDING
UNIVERSITY PARK, PENNSYLVANIA 16802

August 28, 1978

Dear

Please accept my sincere thanks for your participation over the past academic year on the advisory committee for the Pennsylvania State University Competency-Based Teacher Education Project. I know that you are aware of the emphasis being placed upon the Competency-based delivery system by our colleagues throughout the nation.

The unique personal characteristics of in-service vocational industrial education teachers, and the difficulties we have experienced over time in providing for their continued professional growth and development make a competency-based approach to teacher education appear as a viable alternative to the more traditional methods of preparing teachers. Final conclusions to be drawn from this project, however, will be tempered with sufficient input from a cross-section of practitioners within the realm of vocational education. To this end, an advisory committee was organized for the purpose of overseeing the project activities. This advisory committee met on four occasions during the past academic year.

The members of this committee were in-service teachers and administrators like yourself, knowledgeable about the profession and capable of making candid observations. Your contributions to the deliberations of the committee were welcome and helpful. Again my heartfelt thanks for your cooperation.

Sincerely yours,

Wayne L. Detwiler, Sr.
Project Director

WLD/ndk

APPENDIX D

Final List of 173 Competency Statements by Category and with the % Yes-No Responses to the Three Questions Raised on the Survey Instruments

SUGGESTIONS FOR USE OF THE DATA FOUND IN APPENDIX D

A data table was compiled from the results of the survey instruments (T1 through T5) and is presented on pages 94 through 122. This table presents all of the data obtained for each of the three response types to each competency statement.

Referring to the data beginning on page 94, an underlined competency statement number indicates that that competency statement has been rejected by *both* IA Ed. and VIED teachers for one or more of the question categories. As an example, A-15 was rejected by both VIED and IA Ed. teachers. The checks (✓) under response types 1 and 2 and *not* under response type 3 indicates that: 1) according to response type 1, only 12.8% of the IA Ed. teachers and 27.1% of the VIED teachers presently are conducting or have conducted a community survey; 2) response type 2 indicates that only 7.7% of the IA Ed. teachers and 11.7% of the VIED teachers consider this skill a requirement of a beginning teacher; 3) however, 69.5% of the IA Ed. teachers and 70.5% of the VIED teachers think that it is a skill that an experienced teacher should have.

A "τ" or a "Δ" symbol immediately to the *right* of a competency statement number indicates that that competency is unique either to IA Ed. teachers (Δ) or to VIED (τ). As an example, D-3 is a competency unique to VIED under both response types 1 and 2. However, it is a competency of common agreement under response type 3.

Key

1. Δ: A competency statement that has 50% or greater YES responses by IA Ed. teachers but less than 50% VIED teachers. It is, therefore, a competency unique to industrial arts education teachers.

2. τ: A competency statement that has 50% or greater YES responses by VIED teachers but less than 50% by IA Ed. teachers. It is, therefore, a competency unique to VIED teachers.
3. ___ and √: A competency statement that has received less than 50% YES responses by both IA Ed. and VIED teachers. It is, therefore, a rejected competency statement.
4. No symbol: A competency statement that has received more than 50% YES responses by both IA Ed. and VIED teachers. It is, therefore, a common competency.

Appendix D

The Presentation of The Data by Percent Agreement as Obtained From the Five Survey Instruments, T1 Through T5

CATEGORY A: Program Planning, Development, and Evaluation

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
A - 1	IA Ed.	97.8	2.2	85.7	14.3	100	0.0	Develop a course outline.
	VIED	94.6	5.4	76.7	23.3	100	0.0	
A - 2 τ	IA Ed.	29.5	70.5	4.5✓	95.5	81.8	18.2	Organize and operate an advisory committee.
	VIED	77.3τ	22.7	49.3✓	50.7	93.2	6.8	
A - 3 τ	IA Ed.	44.6	55.4	26.7✓	73.3	88.0	12.0	Plan curriculum for in-school youth, out-of-school youth and adults.
	VIED	68.9τ	31.1	35.2✓	64.8	87.7	12.3	
A - 4	IA Ed.	66.7	33.3	50.0	50.0	95.0	5.0	Analyze an occupation for instructional content.
	VIED	95.5	4.5	82.3	17.7	98.4	1.6	
A - 5	IA Ed.	34.9✓	65.1	27.8✓	72.2	82.7	17.3	Analyze the results of a community survey to determine the social, political, economic, cultural and educational forces for their impact upon curriculum development.
	VIED	44.4✓	55.6	27.9✓	72.1	83.9	16.1	
A - 6	IA Ed.	95.3	4.7	86.6	13.4	100	0.0	Incorporate relevant topics from other disciplines (i.e. mathematics, sciences, etc.) into the industrial education course.
	VIED	84.8	15.2	67.7	32.3	90.8	9.2	
A - 7	IA Ed.	88.3	11.7	29.0✓	71.0	98.0	2.0	Develop long range plans for course revision, elimination and additions.
	VIED	83.1	16.9	25.4✓	74.6	95.0	5.0	

CATEGORY A (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
A - 8 τ	IA Ed.	52.0	48.0	37.0	63.0	81.8	18.2	Identify and synthesize job entry level skills.
	VIED	91.7	8.3	67.2 τ	32.8	98.3	1.7	
A - 9	IA Ed.	100.0	0.0	95.1	4.9	100	0.0	Organize in a sequential manner those activities which make up a job or project.
	VIED	94.9	5.1	89.8	10.2	98.3	1.7	
A - 10	IA Ed.	99.0	1.0	92.8	7.2	100	0.0	Organize in a sequential manner those activities which make up an operation.
	VIED	100	0.0	94.5	5.5	100	0.0	
A - 11	IA Ed.	94.8	5.2	89.8	10.2	96.9	3.10	Organize in a sequential manner those activities which make up information topics.
	VIED	94.6	5.4	88.9	11.1	100	0.0	
A - 12	IA Ed.	94.8	5.2	85.3	14.7	100	0.0	Organize instructional activities into a course of study.
	VIED	100	0.0	70.4	29.6	98.2	1.8	
A - 13	IA Ed.	89.5	10.5	73.4	26.6	96.8	3.2	Identify broad educational goals and develop specific instructional objectives in behavioral terms.
	VIED	86.9	13.1	62.3	37.7	98.4	1.6	
A - 14	IA Ed.	92.6	7.4	90.2	9.8	100	0.0	Develop and maintain an inventory of tools, equipment, supplies, and resource materials.
	VIED	96.8	3.2	95.2	4.8	100	0.0	

CATEGORY A (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
A - 15	IA Ed.	12.8✓	87.2	7.7✓	92.3	69.5	30.5	Conduct and report the findings of a community survey.
	VIED	27.1✓	72.9	11.7✓	88.3	70.5	29.5	
A - 16	IA Ed.	72.8	27.2	62.4	37.6	91.5	8.5	Demonstrate a knowledge of model industrial education programs in your specialty area.
	VIED	72.9	27.1	50.8	49.2	94.8	5.2	

CATEGORY B: Instructional Planning

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
B - 1	IA Ed.	88.9	11.1	65.9	34.1	97.8	2.2	Determine needs and interests of students for purpose of developing curriculum.
	VIED	94.6	5.4	77.8	22.2	98.6	1.4	
B - 2	IA Ed.	87.0	13.0	84.8	15.2	96.7	3.3	Involve students in the selection of jobs or projects.
	VIED	82.4	17.6	76.4	23.6	94.5	5.5	
B - 3	IA Ed.	65.2	34.8	74.7	25.3	91.3	8.7	Write and sequence student performance objectives for a lesson
	VIED	88.0	12.0	79.5	20.5	98.6	1.4	
B - 4	IA Ed.	80.2	19.8	67.0	33.0	94.5	5.5	Review and evaluate student performance objectives developed for the industrial education offerings.
	VIED	83.8	16.2	62.0	38.0	95.9	4.1	
B - 5	IA Ed.	97.6	2.4	92.8	7.2	97.6	2.4	Plan a unit of instruction.
	VIED	97.0	3.0	84.6	15.4	98.5	1.5	
B - 6	IA Ed.	78.3	21.7	77.1	22.9	87.8	12.2	Write student performance objectives for a unit.
	VIED	84.4	15.6	69.8	30.2	96.7	3.3	
B - 7	IA Ed.	86.2	13.8	86.2	13.8	98.7	1.3	Correlate unit content with on-the-job and/or laboratory experience.
	VIED	100	0.0	76.9	23.1	100	0.0	

CATEGORY B (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
B - 8	IA Ed.	96.3	3.7	87.8	12.2	98.7	1.3	Determine group and individual learning experiences for a unit of instruction.
	VIED	92.3	7.7	76.2	23.8	100	0.0	
B - 9	IA Ed.	91.8	8.2	95.2	4.8	93.8	6.2	Write a lesson plan.
	VIED	92.4	7.6	89.2	10.8	96.9	3.1	
B - 10	IA Ed.	99.0	1.0	94.2	5.8	99.0	1.0	Select appropriate teaching methods, and techniques for a lesson.
	VIED	95.0	5.0	72.4	27.6	96.7	3.3	
B - 11	IA Ed.	99.0	1.0	78.6	21.4	100	0.0	Obtain and select textbooks, references, and other instructional materials.
	VIED	96.7	3.3	70.7	29.3	98.3	1.7	
B - 12	IA Ed.	92.2	7.8	63.7	36.3	100	0.0	Develop original instructional materials.
	VIED	93.2	6.8	56.9	43.1	96.7	3.3	
B - 13	IA Ed.	66.3	33.7	57.1	42.9	87.6	12.4	Employ ready reference data, e.g. VEIN, manufacturer's specifications, test standards and O.S.H.A.
	VIED	81.4	18.6	65.5	34.5	94.8	5.2	
B - 14	IA Ed.	72.5	27.5	81.6	18.4	94.1	5.9	Write operation sheets.
	VIED	75.0	25.0	74.1	25.9	96.6	3.4	

CATEGORY B (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
B - 15	IA Ed.	62.9	37.1	75.0	25.0	89.6	10.4	Write job sheets
	VIED	83.3	16.7	78.4	21.6	92.6	7.4	
B - 16	IA Ed.	70.1	29.9	78.1	21.9	93.7	6.3	Write assignment sheets.
	VIED	85.7	14.3	81.1	18.9	98.1	1.9	
B - 17	IA Ed.	90.8	9.2	86.5	13.5	99.0	1.0	Utilize trade journals and other technical literature for professional growth and to improve instruction.
	VIED	92.9	7.1	66.7	33.3	96.3	3.7	
B - 18	IA Ed.	84.4	15.6	84.7	15.3	96.9	3.1	Write information sheets.
	VIED	87.5	12.5	81.1	18.9	96.3	3.7	
B - 19	IA Ed.	56.7	43.3	32.3✓	67.7	90.7	9.3	Involve students in the preparation of instructional materials.
	VIED	67.9	32.1	32.1✓	67.9	80.0	20.0	
B - 20	IA Ed.	92.6	7.4	94.7	5.3	96.8	3.2	Prepare instructional materials with a spirit duplicator.
	VIED	74.2	25.8	78.7	21.3	91.9	8.1	
B - 21	IA Ed.	58.5	41.5	71.0	29.0	81.9	18.1	Prepare instructional materials with a stencil duplicator.
	VIED	62.9	37.1	55.7	44.3	87.1	12.9	

CATEGORY B (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
B - 22	IA Ed.	74.7	25.3	84.2	15.8	91.6	8.4	Prepare instructional (hard copy and transparency) materials with a copier.
	VIED	80.3	19.7	68.9	31.1	93.4	6.6	
B - 23	IA Ed.	91.6	8.4	93.7	6.3	96.8	3.2	Prepare lesson plans for substitute teachers.
	VIED	83.9	16.1	82.3	17.7	98.4	1.6	

CATEGORY C: Instructional Execution

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
C - 1	IA Ed.	56.5	43.5	60.9	39.1	89.1	10.9	Direct verbal presentations by students before their peers.
	VIED	70.3	29.7	67.6	32.4	95.8	4.2	
C - 2	IA Ed.	79.3	20.7	82.6	17.4	90.2	9.8	Direct individuals in class reading and written assignments
	VIED	88.0	12.0	89.0	11.0	94.6	5.4	
C - 3	IA Ed.	100	0.0	92.3	7.7	100	0.0	Assist students in helping other students.
	VIED	93.2	6.8	87.1	12.9	98.6	1.4	
C - 4	IA Ed.	79.3	20.7	85.9	14.1	91.3	8.7	Direct groups in class reading and written assignments.
	VIED	81.3	18.7	77.8	22.2	86.3	13.7	
C - 5	IA Ed.	80.4	19.6	88.0	12.0	95.7	4.3	Give homework, research and laboratory assignments.
	VIED	72.0	28.0	79.2	20.8	87.7	12.3	
C - 6	IA Ed.	95.6	4.4	94.5	5.5	97.8	2.2	Present instruction by the job or project method.
	VIED	95.9	4.1	87.8	12.2	97.3	2.7	
C - 7	IA Ed.	98.9	1.1	96.7	3.3	98.9	1.1	Employ oral questioning techniques.
	VIED	98.7	1.3	95.9	4.1	100	0.0	

CATEGORY C (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
C - 8	IA Ed.	95.7	4.3	80.4	19.6	97.8	2.2	Interpret student verbal and non-verbal cues and initiate appropriate action.
	VIED	91.8	8.2	75.3	24.7	98.6	1.4	
C - 9	IA Ed.	85.5	14.5	88.0	12.0	98.8	1.2	Conduct group discussions.
	VIED	96.9	3.1	87.3	12.7	98.5	1.5	
C - 10	IA Ed.	96.5	3.5	93.9	6.1	97.5	2.5	Employ positive reinforcement techniques.
	VIED	98.4	1.6	74.6	25.4	100	0.0	
C - 11	IA Ed.	98.8	1.2	92.8	7.2	100	0.0	Employ various examples or approaches to enable the students to understand a situation.
	VIED	97.0	3.0	84.4	15.6	100	0.0	
C - 12	IA Ed.	95.2	4.8	94.0	6.0	100	0.0	Give an illustrated lecture.
	VIED	98.5	1.5	87.7	12.3	98.5	1.5	
C - 13	IA Ed.	100	0.0	100	0,0	100	0.0	Demonstrate a manipulative skill.
	VIED	97.0	3.0	95.4	4.6	98.5	1.5	
C - 14	IA Ed.	97.6	2.4	95.2	4.8	97.5	2.5	Demonstrate a concept or principle.
	VIED	97.0	3.0	87.7	12.3	98.5	1.5	

CATEGORY C (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
C - 15	IA Ed.	86.9	13.1	95.2	4.8	98.8	1.2	Illustrate with bulletin boards and exhibits as teaching vehicles.
	VIED	90.9	9.1	83.1	16.9	98.5	1.5	
C - 16	IA Ed.	97.7	2.3	97.6	2.4	100	0.0	Present information using models/real objects.
	VIED	95.5	4.5	90.8	9.2	95.4	4.6	
C - 17	IA Ed.	11.7 ✓	88.3	35.0 ✓	65.0	70.0	30.0	Present information with the aid of a flannel board.
	VIED	15.8 ✓	84.2	33.3 ✓	66.7	73.7	26.3	
C - 18	IA Ed.	79.8	20.2	91.3	8.7	100	0.0	Present information with sound and silent filmstrips
	VIED	90.0	10.0	96.7	3.3	100	0,0	
C - 19	IA Ed.	76.0	24.0	88.5	11.5	99.0	1.0	Present information with sound and silent slides.
	VIED	86.7	13.3	88.3	11.7	98.3	1.7	
C - 20	IA Ed.	91.3	8.7	93.3	6.7	98.1	1.9	Present information with sound and silent motion pictures.
	VIED	90.0	10.0	89.8	10.2	98.3	1.7	
C - 21	IA Ed.	61.8	38.2	81.6	18.4	96.1	3.9	Present information with sound and silent single concept films.
	VIED	70.0	30.0	79.3	20.7	93.3	6.7	

CATEGORY C (cont'd)

	Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
	Yes	No	Yes	No	Yes	No	
C - 22 τ IA Ed.	34.6	65.4	68.6	31.4	88.2	11.8	Present information with the aid of a chalkboard.
VIED	64.9 τ	35.1	78.9	21.1	96.6	3.4	
C - 23 IA Ed.	97.1	2.9	95.1	4.9	100	0.0	Present information with the aid of a chart.
VIED	98.3	1.7	98.3	1.7	100	0.0	
C - 24 IA Ed.	100	0.0	99.0	1.0	100	0.0	Direct shop or laboratory activities.
VIED	96.7	3.3	96.7	93.3	100	0.0	
C - 25 IA Ed.	100	0.0	97.1	2.9	100	0.0	Direct students in preparing laboratory work, job, or project plans.
VIED	98.3	1.7	98.3	1.7	100	0.0	
C - 26 IA Ed.	88.4	11.6	90.5	9.5	100	0.0	Use various instruction sheets in the course of study.
VIED	96.4	3.6	83.0	17.0	96.4	3.6	
C - 27 IA Ed.	70.2	29.8	72.6	27.4	91.6	8.4	Use laboratory methods to apply principles of production and experimentation.
VIED	84.6	15.4	78.8	21.2	96.2	3.8	
C - 28 IA Ed.	94.8	5.2	86.5	13.5	97.9	2.1	Direct students in applying problem-solving techniques.
VIED	100	0.0	92.6	7.4	100	0.0	

CATEGORY C (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
C - 29 τ	IA Ed.	53.1	46.9	46.7	53.3	90.4	9.6	Employ techniques of simulation (e.g. production lines, job interviews, etc.).
	VIED	89.1	10.9	71.2 τ	28.8	96.4	3.6	
C - 30 τ	IA Ed.	27.5	72.5	26.1	73.9	63.0	37.0	Present information through case study problems.
	VIED	67.9 τ	32.1	55.8 τ	44.2	85.5	14.5	
C - 31	IA Ed.	58.9	41.1	56.4	43.6	83.9	16.1	Use a variety of instructional modes to individualize learning including contracts, learning packages, programmed materials, teacher/learner planning.
	VIED	69.2	30.8	52.9	47.1	90.4	9.6	
C - 32	IA Ed.	71.9	28.1	89.4	10.6	97.9	2.1	Present information with an overhead projector.
	VIED	90.9	9.1	90.7	9.3	100	0.0	
C - 33	IA Ed.	36.5 ✓	63.5	36.2 ✓	63.8	84.0	16.0	Employ team teaching.
	VIED	48.1 ✓	51.9	40.4 ✓	59.6	83.3	16.7	
C - 34	IA Ed.	60.6	39.4	58.2	41.8	96.8	3.2	Utilize resource persons to supplement learning within the classroom.
	VIED	79.0	21.0	78.7	21.3	96.8	3.2	
C - 35	IA Ed.	52.6	47.4	62.8	37.2	95.8	4.2	Conduct field trips.
	VIED	78.3	21.7	73.8	26.2	100	0.0	

CATEGORY C (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
C - 36	IA Ed.	64.2	35.8	80.0	20.0	91.6	8.4	Present information with the aid of an opaque projector.
	VIED	65.6	34.4	73.3	26.7	96.7	3.3	
C - 37	IA Ed.	31.6 ✓	68.4	50.0	50.0	91.4	8.6	Utilize a teacher's aide to improve classroom instruction.
	VIED	36.1 ✓	63.9	52.5	47.5	86.9	13.1	
C - 38 τ	IA Ed.	38.9	61.1	53.7	46.3	84.2	15.8	Present information with the aid of a video tape recorder.
	VIED	52.5 τ	47.5	59.0	41.0	95.2	4.8	
C - 39	IA Ed.	27.7 ✓	72.3	46.2 ✓	53.8	80.6	19.4	Develop audio visual aids using a video tape recorder.
	VIED	34.4 ✓	65.6	40.0 ✓	60.0	93.5	6.5	
C - 40 τ	IA Ed.	44.2	55.8	63.2	36.8	89.5	10.5	Present information with a tape recorder.
	VIED	58.1 τ	41.9	68.3	31.7	93.5	6.5	
C - 41	IA Ed.	100	0.0	94.7	5.3	100	0.0	Demonstrate the ability to use materials, processes, and tools to assist students in the pursuit of avocational interests.
	VIED	86.9	13.1	80.0	20.0	96.7	3.3	

CATEGORY D: Instructional Evaluation

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
D - 1	IA Ed.	91.3	8.7	84.6	15.4	97.8	2.2	Identify the common types of evaluation instruments.
	VIED	93.3	6.7	80.8	19.2	100	0.0	
D - 2	IA Ed.	94.6	5.4	96.7	3.3	98.9	1.1	Develop tests that measure student knowledge.
	VIED	98.7	1.3	86.5	13.5	98.6	1.4	
D - 3 τ	IA Ed.	40.2	59.8	39.1	60.9	73.9	26.1	Develop tests that assess student attitudes.
	VIED	75.3 τ	24.7	60.0 τ	40.0	91.4	8.6	
D - 4	IA Ed.	80.0	20.0	77.8	22.2	90.0	10.0	Develop tests that measure manipulative skills.
	VIED	85.1	14.9	86.1	13.9	97.3	2.7	
D - 5	IA Ed.	66.7	33.3	63.1	36.9	90.4	9.6	Establish the reliability and validity of teacher made tests.
	VIED	80.0	20.0	55.6	44.4	96.9	3.1	
D - 6	IA Ed.	87.1	12.9	90.5	9.5	97.6	2.4	Administer different kinds of teacher made tests in the classroom.
	VIED	90.9	9.1	85.7	14.3	98.4	1.6	
D - 7 τ	IA Ed.	40.0	60.0	36.1 ✓	63.9	82.9	17.1	Summarize the evaluation of a course for administrators, advisory committee members and board of education.
	VIED	67.7 τ	32.3	33.3 ✓	66.7	85.9	14.1	

CATEGORY D (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
D - 8	IA Ed.	27.4 ✓	72.6	22.2 ✓	77.8	77.5	22.5	Develop techniques to determine the reasons students leave the program before graduating.
	VIED	44.6 ✓	55.4	28.6 ✓	71.4	71.9	28.1	
D - 9	IA Ed.	74.5	25.5	68.7	31.3	91.9	8.1	Utilize supervisory evaluation reports for improving the program.
	VIED	93.0	7.0	77.2	22.8	94.9	5.1	
D - 10	IA Ed.	98.1	1.9	76.2	23.8	99.0	1.0	Assess the adequacy of the facilities and equipment.
	VIED	94.9	5.1	64.4	35.6	98.3	1.7	
D - 11	IA Ed.	99.0	1.0	93.1	6.9	100	0.0	Evaluate student performance and achievement to determine whether course objectives have been met.
	VIED	96.7	3.3	76.3	23.7	100	0.0	
D - 12	IA Ed.	93.8	6.2	92.7	7.3	97.9	2.1	Appraise students' progress according to performance standards.
	VIED	96.4	3.6	94.4	5.6	100	0.0	
D - 13	IA Ed.	67.0	33.0	57.3	42.7	97.9	2.1	Devise a method for students according to performance standards.
	VIED	82.1	17.9	56.6	43.4	96.4	3.6	
D - 14 τ	IA Ed.	40.0	60.0	43.0 ✓	57.0	80.6	19.4	Formulate cooperatively with students, procedures which provide for their participation in the evaluation of instruction.
	VIED	69.8 τ	30.2	44.0 ✓	56.0	82.7	17.3	

CATEGORY D (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
D - 15	IA Ed.	86.6	13.4	85.3	14.7	94.8	5.2	Interpret test data to determine student achievement and to evaluate the affectiveness of instruction.
	VIED	94.5	5.5	81.1	18.9	98.1	1.9	
D - 16	IA Ed.	94.7	5.3	95.8	4.2	96.8	3.2	Formulate a system of grading consistent with school policy.
	VIED	96.8	3.2	90.2	9.8	96.8	3.2	
D - 17 τ	IA Ed.	25.5	74.5	27.7 ✓	72.3	78.7	21.3	Conduct follow-up studies to evaluate the program in terms of student employment patterns and student skills.
	VIED	63.9 τ	36.1	31.7 ✓	68.3	79.0	21.0	
D - 18	IA Ed.	98.9	1.1	96.8	3.2	98.9	1.1	Demonstrate craftsmanship and recognize craftsmanship in others.
	VIED	95.2	4.8	98.4	1.6	98.4	1.6	
D - 19	IA Ed.	79.6	20.4	79.6	20.4	94.6	5.4	Develop methods for teacher self evaluation.
	VIED	77.0	23.0	52.5	47.5	91.9	8.1	

CATEGORY E: Instructional Management

	Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
	Yes	No	Yes	No	Yes	No	
E - 1 IA Ed.	97.8	2.2	98.9	1.1	100	0.0	Integrate safety and health into each industrial education course offering.
VIED	98.6	1.4	94.5	5.5	98.6	1.4	
E - 2 IA Ed.	50.0	50.0	64.8	35.2	87.9	12.1	Organize and implement a safety and health program based upon OSHA standards.
VIED	79.2	20.8	77.8	22.2	97.2	2.8	
E - 3 IA Ed.	96.7	3.3	89.1	10.9	96.7	3.3	Organize and maintain the physical facilities and instructional resources of the course.
VIED	86.1	13.9	78.3	21.7	95.7	4.3	
E - 4 IA Ed.	45.2 ✓	54.8	28.4 ✓	71.6	84.8	15.2	Coordinate school policy for the use of laboratory facilities and equipment by other school personnel and outside groups.
VIED	45.3 ✓	54.7	25.4 ✓	74.6	63.5	36.5	
E - 5 IA Ed.	86.0	14.0	88.0	12.0	91.5	8.5	Formulate with students acceptable standards of behavior in classrooms and laboratories.
VIED	92.4	7.6	87.7	12.3	93.8	6.2	
E - 6 IA Ed.	100	0.0	100	0.0	100	0.0	Uphold acceptable standards of student behavior in classrooms and laboratories.
VIED	100	0.0	100	0.0	100	0.0	
E - 7 IA Ed.	75.7	24.3	72.0	28.0	95.1	4.9	Establish and maintain a system for accumulating, storing, retrieving, and discarding information on learners, curriculum, program materials, instructional resources, student progress, and general administrative matters.
VIED	81.4	18.6	50.9	49.1	89.8	10.2	

CATEGORY E (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
E - 8	IA Ed.	98.3	12.7	67.7	32.3	98.0	2.0	Develop and implement a long-range plan for obtaining, organizing, and maintaining materials, equipment and facilities.
	VIED	76.3	23.7	50.9	49.1	91.5	8.5	
E - 9	IA Ed.	77.7	22.3	86.4	13.6	92.2	7.8	Maintain a record of financial transactions.
	VIED	67.8	32.2	63.6	36.4	82.8	17.2	
E - 10 τ	IA Ed.	28.9	71.1	34.7 ✓	65.3	77.9	22.1	Analyze an industrial survey to determine occupational and educational opportunities within the district.
	VIED	64.3 τ	34.7	34.0 ✓	66.0	80.0	20.0	
E - 11	IA Ed.	89.5	10.5	93.6	6.4	97.8	2.2	Maintain a record of supply, inventories, and equipment maintenance.
	VIED	92.8	1.8	90.7	9.3	98.2	1.8	
E - 12	IA Ed.	72.4	27.6	73.2	26.8	80.4	19.6	Provide first aid materials to students.
	VIED	64.8	35.2	67.3	32.7	80.0	20.0	
E - 13 Δ	IA Ed.	68.8 Δ	31.2	74.2	25.8	80.6	19.4	Administer first aid to injured students.
	VIED	48.4	51.6	54.8	45.2	62.9	37.1	
E - 14	IA Ed.	67.0	33.0	70.2	29.8	83.9	16.1	Organize a student personnel record system.
	VIED	83.3	16.7	66.7	33.3	90.2	9.8	

CATEGORY F: Guidance

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
F - 1	IA Ed.	100	0.0	95.7	4.3	100	0.0	Maintain an "open door policy" for student consultation.
	VIED	97.3	2.7	90.3	9.7	100	0,0	
F - 2	IA Ed.	82.6	17.4	76.1	23.9	95.7	4.3	Communicate with prospective and continuing students about course objectives.
	VIED	88.0	12.0	83.6	16.4	94.6	5.4	
F - 3 τ	IA Ed.	47.8	52.2	47.8	52.2	81.5	18.5	Conduct parental interviews for the purposes of course orientation and student progress.
	VIED	56.9 τ	43.1	55.1 τ	44.9	87.3	12.7	
F - 4 ✓	IA Ed.	7.6 ✓	92.4	17.6 ✓	82.4	52.2	47.8	Conduct home visits for insights into the home-school relationship and to improve student performance.
	VIED	21.1 ✓	78.9	16.4 ✓	83.6	54.4	45.6	
F - 5	IA Ed.	67.8	32.2	61.1	38.9	82.2	17.8	Demonstrate personal concern for the student and his family by encouraging private discussions.
	VIED	77.0	23.0	64.9	35.1	85.1	14.9	
F - 6	IA Ed.	93.4	6.6	74.4	25.6	98.9	1.1	Recognize potential educational, social, economic, and emotional problems of students.
	VIED	95.9	4.1	74.0	26.0	97.3	2.7	
F - 7	IA Ed.	88.2	11.8	92.8	7.2	95.2	4.8	Assist students in developing good study habits.
	VIED	89.4	10.6	83.1	16.9	95.3	4.7	

CATEGORY F (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
F - 8	IA Ed.	88.4	11.6	89.0	11.0	100	0.0	Present information to students on occupational opportunities.
	VIED	98.5	1.5	85.9	14.1	98.4	1.6	
F - 9	IA Ed.	75.3	24.7	76.8	23.2	90.4	9.6	Present information to students on post-high school training and educational opportunities.
	VIED	87.9	12.1	70.8	29.2	93.8	6.2	
F - 10 $^{\tau}$	IA Ed.	36.5	63.5	58.2	41.8	86.2	13.8	Assist graduates or seniors in preparing for interviews with potential employers.
	VIED	93.9 $^{\tau}$	6.1	81.2 $^{\tau}$	18.8	96.9	3.1	
F - 11 $^{\tau}$	IA Ed.	30.6	69.4	45.6	54.4	74.1	25.9	Assist students in securing and filling out applications for jobs, scholarships, educational loans or college admission.
	VIED	78.5 $^{\tau}$	21.5	61.9 $^{\tau}$	38.1	90.5	9.5	
F - 12 $^{\tau}$	IA Ed.	19.6	80.4	24.8	75.2	67.0	33.0	Assist students in understanding the procedure for applying for promotion/or raise.
	VIED	81.4 $^{\tau}$	18.6	75.9 $^{\tau}$	24.1	96.6	3.4	
F - 13 $^{\tau}$	IA Ed.	6.9 $^{\checkmark}$	93.1	11.8 $^{\checkmark}$	88.2	43.0	57.0	Maintain continual follow-up information on the placement, employment, and training status of each graduate of the industrial education program.
	VIED	45.8 $^{\checkmark}$	54.2	26.8 $^{\checkmark}$	73.2	74.1 $^{\tau}$	25.9	
F - 14 $^{\tau}$	IA Ed.	39.8	60.2	41.0 $^{\checkmark}$	59.0	69.7	30.3	Analyze student's cumulative educational records.
	VIED	56.9 $^{\tau}$	43.1	38.2 $^{\checkmark}$	61.8	75.9	24.1	

CATEGORY F (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
F - 15	IA Ed.	53.9	46.1	54.5	45.5	75.0	25.0	Maintain classroom anecdotal records on students.
	VIED	74.1	25.9	75.0	25.0	87.3	12.7	
F - 16 τ	IA Ed.	35.3	64.7	48.0	52.0	71.3	28.6	Review student's autobiographies for information to aid in understanding the student.
	VIED	62.7$^{\tau}$	37.3	57.9$^{\tau}$	42.1	77.6	22.4	
F - 17 τ	IA Ed.	31.0	69.0	40.0$^{\checkmark}$	60.0	67.7	32.3	Assemble information for case study reports on student progress.
	VIED	61.0$^{\tau}$	39.0	49.1$^{\checkmark}$	50.9	86.0	14.0	
F - 18 Δ	IA Ed.	65.3	34.7	62.0$^{\Delta}$	38.0	90.5	9.5	Conduct a conference for counseling a student.
	VIED	63.6	36.4	49.1	50.9	83.3	16.7	
F - 19 τ	IA Ed.	32.0	68.0	27.7$^{\checkmark}$	72.3	69.5	30.5	Conduct occupational and educational counseling sessions.
	VIED	52.7$^{\tau}$	47.3	34.0$^{\checkmark}$	66.0	74.5	25.5	
F - 20	IA Ed.	85.4	14.6	70.2	29.8	93.7	6.3	Demonstrate a knowledge of the teacher's responsibilities for working with special needs students.
	VIED	80.0	20.0	60.4	39.6	92.6	7.4	
F - 21	IA Ed.	50.5	49.5	53.2	46.8	81.7	18.3	Utilize student personnel services or outside agencies to obtain help for special needs students.
	VIED	61.8	38.2	53.7	46.3	85.2	14.8	

CATEGORY F (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
F - 22	IA Ed.	95.9	4.1	89.6	10.4	97.9	2.1	Work with other teachers to help students.
	VIED	94.6	5.4	83.6	16.4	96.4	3.6	
F - 23	IA Ed.	87.4	12.6	86.3	13.7	96.8	3.2	Establish communication patterns for exchanging information and for cooperating with the guidance counselor.
	VIED	90.3	9.7	82.3	17.7	96.8	3.2	
F - 24	IA Ed.	91.6	8.4	83.2	16.8	97.9	2.1	Refer students to the guidance counselor and other specialists (e.g. speech pathologists, audiologists, reading specialists, etc.)
	VIED	88.5	11.5	78.7	21.3	98.4	1.6	
F - 25	IA Ed.	84.2	15.8	86.2	13.8	94.7	5.3	Supply the guidance counselor with performance data about students.
	VIED	93.5	6.5	90.3	9.7	96.8	3.2	
F - 26	IA Ed.	97.9	2.1	100	0.0	100	0.0	Develop constructive working relationships among students through planned activities.
	VIED	95.2	4.8	88.7	11.3	100	0.0	
F - 27 τ	IA Ed.	13.2 ✓	86.8	16.5 ✓	93.5	43.8	56.2	Gather student data using statistical data collection techniques.
	VIED	41.0 ✓	59.0	32.8 ✓	67.2	64.5 τ	35.5	
F - 28	IA Ed.	81.1	18.9	70.3	29.7	97.8	2.2	Write letters of recommendation.
	VIED	91.8	8.2	73.3	26.7	93.5	6.4	

CATEGORY G		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
G - 1 Δ,τ	IA Ed.	47.8	52.2	51.1 Δ	48.9	84.4	15.6	Develop a school-community relations program.
	VIED	65.8 τ	34.2	39.1	60.9	81.4	18.6	
G - 2	IA Ed.	72.8	27.2	65.6	34.4	94.5	5.5	Maintain contacts with industry.
	VIED	93.3	6.7	86.3	13.7	97.3	2.7	
G - 3	IA Ed.	41.0	59.0	42.2 ✓	57.8	87.8	12.2	Give presentations to the public and to the profession to promote the program.
	VIED	62.5 τ	37.5	36.5 ✓	63.5	93.7	6.3	
G - 4	IA Ed.	23.5 ✓	76.5	31.0 ✓	69.0	78.4	21.6	Develop brochures to promote the program.
	VIED	44.8 ✓	55.2	32.1 ✓	67.9	77.2	22.8	
G - 5	IA Ed.	72.5	27.5	78.0	22.0	94.1	5.9	Prepare displays to promote the program.
	VIED	67.2	32.8	58.9	41.1	83.1	16.9	
G - 6 τ	IA Ed.	41.1	58.9	42.4 ✓	57.6	81.7	18.3	Prepare news releases and articles concerning the program.
	VIED	55.4 τ	44.6	43.4 ✓	56.6	77.8	22.2	
G - 7	IA Ed.	12.9 ✓	87.1	24.2 ✓	75.8	64.1	35.9	Arrange for television and radio presentations concerning the program.
	VIED	18.5 ✓	81.5	13.5 ✓	86.5	55.8	44.2	

CATEGORY G (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
G - 8	IA Ed.	89.5	10.5	88.2	11.8	98.9	1.1	Conduct an open house in your educational area.
	VIED	95.2	4.8	90.2	9.8	100	0.0	
G - 9 Δ	IA Ed.	55.8	44.2	53.2 Δ	46.8	91.5	8.5	Identify and work with appropriate local and state personnel to solve educational problems.
	VIED	58.3	41.7	29.3	70.7	86.9	13.1	

CATEGORY H: Student Organization

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
H - 1 τ	IA Ed.	42.4	57.6	35.9	64.1	85.9	14.1	Establish student organizations.
	VIED	65.3$^{\tau}$	34.7	56.9$^{\tau}$	43.1	89.0	11.0	
H - 2 τ	IA Ed.	40.5	59.5	54.2	45.8	85.4	14.6	Acquaint prospective members and their parents with the purposes, activities and values of the student organizations.
	VIED	68.2$^{\tau}$	31.8	57.8	42.2	87.5	12.5	
H - 3 Δ;τ	IA Ed.	30.5	69.5	51.9$^{\Delta}$	48.1	85.2	14.8	Conduct organizational meetings for student organizations.
	VIED	53.8$^{\tau}$	46.2	46.0	54.0	82.5	17.5	
H - 4	IA Ed.	14.9$^{\checkmark}$	85.1	17.2$^{\checkmark}$	82.8	59.6	40.0	Assist in the development of a consitituion and bylaws for student organizations.
	VIED	39.0$^{\checkmark}$	61.0	26.8$^{\checkmark}$	73.2	81.0	19.0	
H - 5 τ	IA Ed.	45.8	54.2	41.5	58.5	75.8	24.2	Prepare students for leadership roles in student organizations.
	VIED	69.6$^{\tau}$	30.4	50.9$^{\tau}$	49.1	87.0	13.0	
H - 6 τ	IA Ed.	20.4	79.6	27.2$^{\checkmark}$	72.8	57.6	42.4	Assist students in developing and financing a yearly program of activities in student organizations.
	VIED	50.0$^{\tau}$	50.0	34.0$^{\checkmark}$	66.0	79.6	20.4	
H - 7	IA Ed.	52.6	47.4	60.2	39.8	88.3	11.7	Guide student participation in student organization contests.
	VIED	62.3	37.7	63.3	36.7	87.1	12.9	

CATEGORY H (cont'd)

	Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
	Yes	No	Yes	No	Yes	No	
IA Ed.	52.6	47.4	60.6	39.4	85.1	14.9	Assist students with publicizing the activities of the student organization.
VIED	52.5	47.5	58.3	41.7	87.1	12.9	

H - 8

CATEGORY I: Professional Role and Development

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
I - 1	IA Ed.	90.2	9.8	90.2	9.8	98.9	1.1	Keep up-to-date with current trends in general education by reading professional literature and attending professional meetings.
	VIED	90.4	9.6	86.3	13.7	97.2	2.8	
I - 2	IA Ed.	92.3	7.7	95.6	4.4	98.9	1.1	Keep up-to-date with current trends in Industrial education by reading professional literature and attending professional meetings.
	VIED	93.1	6.9	86.3	13.7	100	0.0	
I - 3	IA Ed.	83.7	16.3	91.2	8.8	95.6	4.4	Belong to and participate in appropriate professional organizations.
	VIED	78.7	21.3	70.3	29.7	95.9	4.1	
I - 4	IA Ed.	91.8	8.2	86.7	13.3	98.8	1.2	Establish a personal, professional library.
	VIED	90.8	9.2	69.8	30.2	98.4	1.6	
I - 5 τ	IA Ed.	34.9	65.1	38.0 ✓	62.0	95.0	5.0	Plan the student teaching experience.
	VIED	50.8 τ	49.2	36.1 ✓	63.9	90.5	9.5	
I - 6	IA Ed.	30.5 ✓	69.5	9.1 ✓	90.9	95.2	4.8	Supervise student teachers.
	VIED	31.2 ✓	68.8	11.3 ✓	88.7	95.3	4.7	
I - 7	IA Ed.	94.2	5.8	97.1	2.9	99.0	1.0	Understand the legal aspects of the industrial education teacher's role especially concerning health, safety, and first aid in accident situations.
	VIED	93.2	6.8	86.2	13.8	100	0.0	

CATEGORY I (cont'd)

		Response 1		Response 2		Response 3		COMPETENCY STATEMENTS
		Yes	No	Yes	No	Yes	No	
I - 8	IA Ed.	88.3	11.7	84.3	15.7	95.1	4.9	Demonstrate an understanding of the history of industry and technology.
	VIED	86.4	13.6	80.7	19.3	93.2	6.8	
I - 9	IA Ed.	84.3	15.7	81.0	19.0	94.1	5.9	Demonstrate an understanding of the societal impact of technological developments.
	VIED	87.7	12.3	76.8	23.2	96.5	3.5	
I - 10 Δ	IA Ed.	70.8	29.2	57.4Δ	42.6	83.2	16.8	Demonstrate a knowledge of research and development, marketing, production planning, and production activities.
	VIED	63.6	36.4	45.1	54.9	72.5	27.5	
I - 11	IA Ed.	86.6	13.4	79.6	20.4	88.4	11.6	Demonstrate a knowledge of the historical and future use of industrial materials.
	VIED	83.6	16.4	61.5	38.5	92.6	7.4	
I - 12	IA Ed.	79.4	20.6	77.4	22.6	87.4	12.6	Demonstrate a knowledge of the physical and chemical characteristics of materials used in industry.
	VIED	92.9	7.1	70.9	28.1	92.7	7.3	
I - 13	IA Ed.	87.1	12.9	91.4	8.6	94.6	5.4	Identify and select appropriate material for specific applications; including forest products metallics, plastics, ceramics, leather, textiles and others.
	VIED	70.0	30.0	67.8	32.2	85.0	15.0	
I - 14	IA Ed.	92.6	7.4	91.4	8.6	98.9	1.1	Demonstrate a knowledge of material sources and how they are processed for industrial use.
	VIED	79.0	21.0	80.6	19.4	91.9	8.1	

CATEGORY I (cont'd)

COMPETENCY STATEMENTS

	Response 1		Response 2		Response 3	
	Yes	No	Yes	No	Yes	No
IA Ed.	89.5	21.0	80.6 Δ	19.4	97.9	2.1
VIED	52.5	47.5	46.7	53.3	77.0	23.0

I - 15 Δ Develop a personal philosophy of industrial education for the elementary, middle, junior, senior, and post high school.

APPENDIX E

Examples of the Five Survey Instruments

The Pennsylvania State University

COLLEGE OF EDUCATION

Division of Occupational and Vocational Studies

RACKLEY BUILDING

UNIVERSITY PARK, PENNSYLVANIA 16802

November 15, 1977

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Because we realize that it would be unreasonable to ask you to react to the entire list, the enclosed survey instrument represents only one fifth of that list.

Therefore, do not be concerned if you do not see all the responsibilities that you feel are required of the beginning teacher. However, should you desire to comment on any of the items, please feel free to do so in the space provided.

Your participation in this survey is not only appreciated, but vital to the success of the project and the future directions of industrial teacher education programs in Pennsylvania.

Professionally yours,

Wayne L. Detwiler, Sr.

Wayne L. Detwiler, Sr.
Assistant Project Director for
Vocational Education

John M. Shemick

John M. Shemick
Project Coordinator for
Industrial Arts Education

bcg

THE SURVEY INSTRUMENT

DIRECTIONS: The following items represent some teacher competencies (or responsibilities). Please react to each of the following items by blackening in your response in the places provided beside each statement in terms of: (1) Do you do this on your present job, (2) Is this fundamental for a first year teacher, and (3) Should an experienced teacher be able to do this.

Competency or Responsibility	Do You Do This On Your Present Job?		Is This Fundamental For A First Year Teacher?		Should An Experienced Teacher Be Able To Do This?	
	Yes	No	Yes	No	Yes	No
1. Develop a course outline.	0	0	0	0	0	0
2. Organize and operate an advisory committee.	0	0	0	0	0	0
3. Plan curriculum for in school youth, out-of-school youth and adults.	0	0	0	0	0	0
4. Determine needs and interests of students for the purpose of developing curriculum.	0	0	0	0	0	0
5. Involve students in the selection of jobs for projects.	0	0	0	0	0	0
6. Write and sequence student performance objectives for a lesson.	0	0	0	0	0	0
7. Review and evaluate student performance objectives developed for the industrial education offerings.	0	0	0	0	0	0
8. Direct verbal presentations by students before their peers.	0	0	0	0	0	0
9. Direct individual in class reading and written assignments.	0	0	0	0	0	0
10. Assist students in helping other students.	0	0	0	0	0	0
11. Direct group in class reading and written assignments.	0	0	0	0	0	0
12. Give homework, research and laboratory assignments.	0	0	0	0	0	0
13. Present instruction by the job or project method.	0	0	0	0	0	0
14. Employ oral questioning techniques.	0	0	0	0	0	0
15. Interpret student verbal and non-verbal cues and initiate appropriate action.	0	0	0	0	0	0

		Yes	No	Yes	No	Yes	No
16.	Identify the common types of evaluation instruments.	0	0	0	0	0	0
17.	Develop tests that measure student knowledge.	0	0	0	0	0	0
18.	Develop tests that assess student attitudes.	0	0	0	0	0	0
19.	Develop tests that measure manipulative skills.	0	0	0	0	0	0
20.	Integrate safety and health into each industrial education course offering.	0	0	0	0	0	0
21.	Organize and implement a safety and health program based upon OSHA standards.	0	0	0	0	0	0
22.	Organize and maintain the physical facilities and instructional resources of the course.	0	0	0	0	0	0
23.	Maintain an "open door policy" for student consultation.	0	0	0	0	0	0
24.	Communicate with prospective and continuing students about course objectives.	0	0	0	0	0	0
25.	Conduct parental interviews for the purpose of course orientation.	0	0	0	0	0	0
26.	Conduct home visits for insights into the home-school relationship and to improve student performance.	0	0	0	0	0	0
27.	Demonstrate personal concern for the student and his family by encouraging private discussions.	0	0	0	0	0	0
28.	Recognize potential educational, social, economic, and emotional problems of students.	0	0	0	0	0	0
29.	Develop a school-community relations program.	0	0	0	0	0	0
30.	Maintain contacts with industry.	0	0	0	0	0	0
31.	Establish student organizations.	0	0	0	0	0	0
32.	Keep up-to-date with current trends in general education by reading professional literature and attending professional meetings.	0	0	0	0	0	0
33.	Keep up-to-date with current trends in Industrial Education by reading professional literature and attending professional meetings.	0	0	0	0	0	0
34.	Belong and participate in appropriate professional organizations.	0	0	0	0	0	0

TURN TO THE NEXT PAGE

DIRECTIONS: The following demographic information is critical to the computer analysis of the data. Please answer the following questions about yourself by filling in the blank provided at the right of each question.

1. How many full years of experience have you had teaching in industrial education? _____.

2. How many years of occupational work experience have you had in your specialty area (do not include teaching experience)? _____.

3. What type of teaching certificate do you hold in your primary teaching area? _____.

4. What is your highest education level? _____.

5. What is the primary subject area in which you teach? _____.

As classroom teachers, we appreciate just how busy your day is, and how difficult it was for you to find the time to complete this survey.

You may be assured that the time you have spent today will have an impact on the direction of teacher education in our service area.

Respectfully,
The Project Members

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THE SURVEY INSTRUMENT

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Competency or Responsibility	Do You Do This On Your Present Job?		Is This Fundamental For A First Year Teacher?		Should An Experienced Teacher Be Able To Do This?	
	Yes	No	Yes	No	Yes	No
1. Analyze an occupation for instructional content.	0	0	0	0	0	0
2. Analyze the results of a community survey to determine the social, political, economic, cultural and educational forces for their impact upon curriculum development.	0	0	0	0	0	0
3. Incorporate relevant topics from other disciplines (i.e. mathematics, science, etc.) into the industrial education course.	0	0	0	0	0	0
4. Plan a unit of instruction.	0	0	0	0	0	0
5. Write student performance objectives for a unit.	0	0	0	0	0	0
6. Correlate unit content with on-the-job and/or laboratory experience.	0	0	0	0	0	0
7. Determine group and individual learning experiences for a unit of instruction.	0	0	0	0	0	0
8. Write a lesson plan.	0	0	0	0	0	0
9. Conduct group discussions.	0	0	0	0	0	0
10. Employ positive reinforcement techniques.	0	0	0	0	0	0
11. Employ various examples or approaches to enable the students to understand a situation.	0	0	0	0	0	0
12. Give an illustrated lecture.	0	0	0	0	0	0
13. Demonstrate a manipulative skill.	0	0	0	0	0	0
14. Demonstrate a concept or principle.	0	0	0	0	0	0
15. Illustrate with bulletin boards and exhibits as teaching vehicles.	0	0	0	0	0	0

		Yes	No	Yes	No	Yes	No
16.	Present information using models/real objects.	0	0	0	0	0	0
17.	Establish the reliability and validity of teacher made tests.	0	0	0	0	0	0
18.	Administer different kinds of teacher made tests in the classroom.	0	0	0	0	0	0
19.	Summarize the evaluation of a course for administrators, advisory committee members, and the board of education.	0	0	0	0	0	0
20.	Develop techniques to determine the reasons students leave the program before graduating.	0	0	0	0	0	0
21.	Coordinate school policy for the use of laboratory facilities and equipment by other school personnel and outside groups.	0	0	0	0	0	0
22.	Formulate with students acceptable standards of behavior in classrooms and laboratories.	0	0	0	0	0	0
23.	Uphold acceptable standards of student behavior in classrooms and laboratories.	0	0	0	0	0	0
24.	Assist students in developing good study habits.	0	0	0	0	0	0
25.	Present information to students on occupational opportunities.	0	0	0	0	0	0
26.	Present information to students on post-high school training and educational opportunities.	0	0	0	0	0	0
27.	Assist graduates or seniors in preparing for interviews with potential employers.	0	0	0	0	0	0
28.	Assist students in securing and filling out applications for jobs, scholarships, educational loans or college admission.	0	0	0	0	0	0
29.	Give presentations to the public and to the profession to promote the program.	0	0	0	0	0	0
30.	Acquaint prospective members and their parents with the purposes, activities, and values of the student organizations.	0	0	0	0	0	0
31.	Conduct organizational meetings for student organizations.	0	0	0	0	0	0
32.	Establish a personal professional library.	0	0	0	0	0	0
33.	Plan the student teaching experience.	0	0	0	0	0	0
34.	Supervise student teaching.	0	0	0	0	0	0

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Competency or Responsibility	Do You Do This On Your Present Job?		Is This Fundamental For A First Year Teacher?		Should An Experienced Teacher Be Able To Do This?	
	Yes	No	Yes	No	Yes	No
1. Develop long range plans for course revision, elimination and additions.	0	0	0	0	0	0
2. Identify and synthesize job entry level skills.	0	0	0	0	0	0
3. Organize in a sequential manner those activities which make up a job or project.	0	0	0	0	0	0
4. Select appropriate teaching methods, and techniques for a lesson.	0	0	0	0	0	0
5. Obtain and select textbooks, references, and other instructional materials.	0	0	0	0	0	0
6. Develop original instructional materials.	0	0	0	0	0	0
7. Employ ready reference data, e.g. VEIN, manufacturer's specifications, test standards and O.S.H.A.	0	0	0	0	0	0
8. Write operation sheets.	0	0	0	0	0	0
9. Present information with the aid of a flannel board.	0	0	0	0	0	0
10. Present inforamtion with sound and silent filmstrips.	0	0	0	0	0	0
11. Present information with sound and silent slides.	0	0	0	0	0	0
12. Present information with sound and silent motion pictures.	0	0	0	0	0	0
13. Present information with single concept films.	0	0	0	0	0	0
14. Present information with the aid of a flip chart.	0	0	0	0	0	0
15. Present information with the aid of a chalkboard.	0	0	0	0	0	0
16. Direct shop or laboratory activities.	0	0	0	0	0	0
17. Direct students in preparing laboratory work, job, or project plans.	0	0	0	0	0	0

		Yes	No	Yes	No	Yes	No
18.	Utilize supervisory evaluation reports for improving the program.	0	0	0	0	0	0
19.	Assess the adequacy of the facilities and equipment.	0	0	0	0	0	0
20.	Evaluate student performance and achievement to determine whether course objectives have been met.	0	0	0	0	0	0
21.	Establish and maintain a system for accumulating, storing, retrieving, and discarding information on learners, curriculum, program materials, instructional resources, student progress, and general administrative matters.	0	0	0	0	0	0
22.	Develop and implement a long-range plan for obtaining, organizing, and maintaining materials, equipment, and facilities.	0	0	0	0	0	0
23.	Maintain a record of financial transactions.	0	0	0	0	0	0
24.	Assist students in understanding the procedure for applying for promotion and/or raise.	0	0	0	0	0	0
25.	Maintain continual follow-up information on the placement, employment, and training status of each graduate of the industrial education program.	0	0	0	0	0	0
26.	Analyze student's cumulative educational records.	0	0	0	0	0	0
27.	Maintain classroom anecdotal records on students.	0	0	0	0	0	0
28.	Review students' autobiographies for information to aid in understanding the students.	0	0	0	0	0	0
29.	Assemble information for case study reports on student progress.	0	0	0	0	0	0
30.	Develop brochures to promote the program.	0	0	0	0	0	0
31.	Prepare displays to promote the program.	0	0	0	0	0	0
32.	Assist in the development of a constitution and bylaws for student organizations.	0	0	0	0	0	0
33.	Understand the legal aspects of the industrial education teacher's role especially concerning health, safety, and first aid in accident situations.	0	0	0	0	0	0
34.	Demonstrate an understanding of the history of industry and technology.	0	0	0	0	0	0
35.	Demonstrate an understanding of the societal impact of technological developments.	0	0	0	0	0	0

TURN TO THE NEXT PAGE

DIRECTIONS: The following demographic information is critical to the computer analysis of the data. Please answer the following questions about yourself by filling in the blank provided at the right of each question.

1. How many full years of experience have you had teaching in industrial education? _____.

2. How many years of occupational work experience have you had in your specialty area (do not include teaching experience)? _____.

3. What type of teaching certificate do you hold in your primary teaching area? _____.

4. What is your highest education level? _____.

5. What is the primary subject area in which you teach? _____.

As classroom teachers, we appreciate just how busy your day is, and how difficult it was for you to find the time to complete this survey.

You may be assured that the time you have spent today will have an impact on the direction of teacher education in our service area.

Respectfully,
The Project Members

GENERAL COMMENTS ABOUT THE SURVEY:

The Pennsylvania State University

COLLEGE OF EDUCATION

Division of Occupational and Vocational Studies

RACKLEY BUILDING

UNIVERSITY PARK, PENNSYLVANIA 16802

November 15, 1977

Dear Fellow Industrial Educator:

On behalf of the Pennsylvania Department of Education, Penn State is conducting a study to identify the professional responsibilities that teachers with Instructor I certification in Industrial Education (industrial arts and vocational-industrial) should have. Almost two hundred responsibilities have been identified which now have to be verified by teachers in the field, such as yourself.

Because we realize that it would be unreasonable to ask you to react to the entire list, the enclosed survey instrument represents only one fifth of that list.

Therefore, do not be concerned if you do not see all the responsibilities that you feel are required of the beginning teacher. However, should you desire to comment on any of the items, please feel free to do so in the space provided.

Your participation in this survey is not only appreciated, but vital to the success of the project and the future directions of industrial teacher education programs in Pennsylvania.

Professionally yours,

Wayne L. Detwiler, Sr.

Wayne L. Detwiler, Sr.
Assistant Project Director for
Vocational Education

John M. Shemick

John M. Shemick
Project Coordinator for
Industrial Arts Education

bcg

THE SURVEY INSTRUMENT

DIRECTIONS: The following items represent some teacher competencies (or responsibilities). Please react to each of the following items by blackening in your response in the places provided beside each statement in terms of: (1) Do you do this on your present job, (2) Is this fundamental for a first year teacher, and (3) Should an experienced teacher be able to do this.

Competency or Responsibility	Do You Do This On Your Present Job?		Is This Fundamental For A First Year Teacher?		Should An Experienced Teacher Be Able To Do This?	
	Yes	No	Yes	No	Yes	No
1. Organize in a sequential manner those activities which make up an operation.	0	0	0	0	0	0
2. Organize in a sequential manner those activities which make up information topics.	0	0	0	0	0	0
3. Organize instructional activities into a course of study.	0	0	0	0	0	0
4. Write job sheets.	0	0	0	0	0	0
5. Write assignment sheets.	0	0	0	0	0	0
6. Utilize trade journals and other technical literature for professional growth and to improve instruction.	0	0	0	0	0	0
7. Write information sheets.	0	0	0	0	0	0
8. Involve students in the preparation of instructional materials.	0	0	0	0	0	0
9. Use various instruction sheets in the course of study.	0	0	0	0	0	0
10. Use laboratory methods to apply principles of production and experimentation.	0	0	0	0	0	0
11. Direct students in applying problem-solving techniques.	0	0	0	0	0	0
12. Employ techniques of simulation (e.g. production line, job interviews, etc.)	0	0	0	0	0	0
13. Present information through case study problems.	0	0	0	0	0	0
14. Use a variety of instructional modes to individualize learning including contracts, learning packages, programmed materials, teacher/learner planning.	0	0	0	0	0	0
15. Present information with an overhead projector.	0	0	0	0	0	0
16. Employ team teaching.	0	0	0	0	0	0

		Yes	No	Yes	No	Yes	No
17.	Appraise student's progress according to performance standards.	0	0	0	0	0	0
18.	Devise a method for students to evaluate their own progress.	0	0	0	0	0	0
19.	Formulate cooperatively with students procedures for their participation in the evaluation of instruction.	0	0	0	0	0	0
20.	Interpret test data to determine student achievement and to evaluate the affectiveness of instruction.	0	0	0	0	0	0
21.	Analyze an industrial survey to determine occupational and educational opportunities within the district.	0	0	0	0	0	0
22.	Maintain a record of supply, inventories, and equipment maintenance.	0	0	0	0	0	0
23.	Provide first aid materials to students.	0	0	0	0	0	0
24.	Conduct a conference for counseling a student.	0	0	0	0	0	0
25.	Conduct occupational and educational group counseling sessions.	0	0	0	0	0	0
26.	Demonstrate a knowledge of the teacher's responsibilities for working with special needs student.	0	0	0	0	0	0
27.	Utilize student personnel services or outside agencies to obtain help for special needs students.	0	0	0	0	0	0
28.	Work with other teachers to help students.	0	0	0	0	0	0
29.	Prepare news releases and articles concerning the program.	0	0	0	0	0	0
30.	Arrange for television and radio presentations concerning the program.	0	0	0	0	0	0
31.	Prepare students for leadership roles in student organizations.	0	0	0	0	0	0
32.	Assist students in developing and financing a yearly program of activities in student organizations.	0	0	0	0	0	0
33.	Demonstrate a knowledge of research and development, marketing, production planning, and production activities.	0	0	0	0	0	0
34.	Demonstrate a knowledge of the historical and future use of industrial materials.	0	0	0	0	0	0
35.	Demonstrate a knowledge of the physical and chemical characteristics of materials used in industry.	0	0	0	0	0	0

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THE SURVEY INSTRUMENT

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Competency or Responsibility	Do You Do This On Your Present Job?		Is This Fundamental For A First Year Teacher?		Should An Experienced Teacher Be Able To Do This?	
	Yes	No	Yes	No	Yes	No
1. Identify broad educational goals and develop specific instructional objectives in behavioral terms.	0	0	0	0	0	0
2. Develop and maintain an inventory of tools, equipment, supplies, and resource materials.	0	0	0	0	0	0
3. Conduct and report the findings of a community survey.	0	0	0	0	0	0
4. Demonstrate a knowledge of model industrial education programs in your specialty area.	0	0	0	0	0	0
5. Prepare instructional materials with a spirit duplicator.	0	0	0	0	0	0
6. Prepare instructional materials with a stencil duplicator.	0	0	0	0	0	0
7. Prepare instructional (hard copy and transparency) materials with a copier.	0	0	0	0	0	0
8. Prepare lesson plans for substitute teachers.	0	0	0	0	0	0
9. Utilize resource person to supplement learning within the classroom.	0	0	0	0	0	0
10. Conduct field trips.	0	0	0	0	0	0
11. Present information with the aid of an opaque projector.	0	0	0	0	0	0
12. Utilize a teacher's aid to improve classroom instruction.	0	0	0	0	0	0
13. Present information with the aid of a video tape recorder.	0	0	0	0	0	0
14. Develop audio visual aids using a video tape recorder.	0	0	0	0	0	0
15. Present information with a tape recorder.	0	0	0	0	0	0
16. Demonstrate the ability to use materials, processes, and tools to assist students in the pursuit of avocational interests.	0	0	0	0	0	0

		Yes	No	Yes	No	Yes	No
17.	Formulate a system of grading consistent with school policy.	0	0	0	0	0	0
18.	Conduct follow-up studies to evaluate the program in terms of student employment patterns and student skills.	0	0	0	0	0	0
19.	Demonstrate craftsmanship and recognize craftsmanship in others.	0	0	0	0	0	0
20.	Develop methods for teacher self evaluation.	0	0	0	0	0	0
21.	Administer first aid to injured students.	0	0	0	0	0	0
22.	Organize a student personnel record system.	0	0	0	0	0	0
23.	Establish communication patterns for exchanging information and for cooperating with the guidance counselor.	0	0	0	0	0	0
24.	Refer students to the guidance counselor and other specialists (e.g. speech pathologists, audiologists, reading specialists, etc.).	0	0	0	0	0	0
25.	Supply the guidance counselor with performance data about students.	0	0	0	0	0	0
26.	Develop constructive working relationships among students through planned activities.	0	0	0	0	0	0
27.	Gather student data using statistical data collection techniques.	0	0	0	0	0	0
28.	Write letters of recommendation.	0	0	0	0	0	0
29.	Conduct an open house in your educational area.	0	0	0	0	0	0
30.	Identify and work with appropriate local and state personnel to solve educational problems.	0	0	0	0	0	0
31.	Guide student participation in student organization contests.	0	0	0	0	0	0
32.	Assist students with publicizing the activities of the student organization.	0	0	0	0	0	0
33.	Identify and select appropriate materials for specific applications, including forest products, metallics, plastics, ceramics, leather, textiles, and others.	0	0	0	0	0	0
34.	Demonstrate a knowledge of material sources and how they are processed for industrial use.	0	0	0	0	0	0
35.	Develop a personal philosophy of industrial education for the elementary, middle, junior, senior, and post high school.	0	0	0	0	0	0

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GENERAL COMMENTS ABOUT THE SURVEY:

APPENDIX F

Course Evaluation for I. Ed. 19v During the 1977
Summer, 1977 Fall, and 1978 Winter Terms

APPENDIX F

Course Evaluation for Ind. Ed. 19v During 1977-1978 Summer, Fall and Winter Terms

Course Ratings
(Items 1-7 on the I[illegible] - See Next Page)

ITEM	~ PERCENTILE RANKS		
1. Clarity of Course Objectives	75	>90	>90
2. Organization of Course Content	50	90	~87
3. Pace of the Class	75	>90	>90
4. Suitability of Modules	<10	~22	~45
5. Helpfulness of Outside Assignments	~73	>90	~70
6. Quality of Examinations	~73	90	>90
7. Overall Rating of Course	~65	~85	>90
Term:	Summer	Fall	Winter
Class:	I. Ed. 19v1	I. Ed. 19v2	I. Ed. 19v3
N=91:	n_1=35	n_2=37	n_3=19

THE PENNSYLVANIA STATE UNIVERSITY

INSTRUCTION EVALUATION FORM (IEF)

INSTRUCTIONS: Use #2 pencil, not ink. Erase completely when changing a mark. Do not make stray marks.

CODING AREA

(USE ACCORDING TO DIRECTIONS FROM YOUR INSTRUCTOR)

A	0 1 2 3 4 5 6 7 8 9		F	0 1 2 3 4 5 6 7 8 9		K	0 1 2 3 4 5 6 7 8 9		P	0 1 2 3 4 5 6 7 8 9	
B	0 1 2 3 4 5 6 7 8 9		G	0 1 2 3 4 5 6 7 8 9		L	0 1 2 3 4 5 6 7 8 9		Q	0 1 2 3 4 5 6 7 8 9	
C	0 1 2 3 4 5 6 7 8 9		H	0 1 2 3 4 5 6 7 8 9		M	0 1 2 3 4 5 6 7 8 9		R	0 1 2 3 4 5 6 7 8 9	
D	0 1 2 3 4 5 6 7 8 9		I	0 1 2 3 4 5 6 7 8 9		N	0 1 2 3 4 5 6 7 8 9		S	0 1 2 3 4 5 6 7 8 9	
E	0 1 2 3 4 5 6 7 8 9		J	0 1 2 3 4 5 6 7 8 9		O	0 1 2 3 4 5 6 7 8 9		T	0 1 2 3 4 5 6 7 8 9	

QUESTIONNAIRE: Rate each item below from "A" (most favorable) to "E" (least favorable). Blacken one lettered circle per item.

1. Clarity of course objectives Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	7. Overall rating of course Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	13. Course made interesting by instructor Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
2. Organization of course content Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	8. Instructor's interest in teaching course Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	14. Availability of instructor assistance outside of class Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
3. Pace of the class Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	9. Instructor's daily preparation for class Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	15. Fairness of grading policies Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
4. Suitability of textbooks and or materials Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	10. Clarity of explanations Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	16. Instructor's attitude toward students Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
5. Helpfulness of outside assignments Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	11. Encouragement of participation and discussion Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	17. Instructor's effect on student motivation Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
6. Quality of examinations Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	12. Stimulation of thinking Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	18. Overall rating of instructor Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

OPTIONAL EXTRA ITEMS

19. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
20. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
21. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
22. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
23. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
24. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
25. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
26. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
27. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ
28. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ Ⓗ Ⓘ Ⓙ

COMMENTS

What did you like best about this course? 2. What did you like least about this course? 3. What suggestions would you make to improve this course?

NCS Trans-Optic F4200 54321

You may also write on the other side of this tear-off strip.